Personal Computer Modems

This product survey outlines the major features of modems targeted at personal computer users who will transmit data over the public telephone (DDD) network. Modems are solid-state devices that change (modulate) the digital signals from computers and computer equipment into analog signals, a transmission form suitable for the telephone network. The word "modem" is a contraction of MODulate/DEModulate; both functions reside in a modem, meaning that it can both send and receive data transmissions.

This survey includes modems that connect directly to the network through modular wall jacks and acoustic couplers with rubber "cups" that cradle a telephone handset to acoustically couple data communication through the transducers of a standard telephone. In general, direct connection is less error-prone and more reliable than acoustic coupling; but in situations where direct connection is impossible or impractical—such as with a portable terminal or computer or in a hard-wired PBX (in-house telephone switch) environment—an acoustic coupler is indispensable. Some modem models presented in this survey support both direct connection and acoustic coupling, providing the user with a flexible choice of connect options.

Personal computer modems come in a variety of price ranges, from about $65 to $1,800, depending on their differing purposes and the attendant complexity. The major cost factor is the data rate—or speed—of the modem, measured in bits per second (bps). Ten bits per second equates to 1 character transmitted per second, with popular rates at 0 to 300 bps (30 characters per second), 1200 bps, and 2400 bps, with correspondingly higher prices for the higher-speed units. The 300-bps modems at the low end, represented by the AT&T 103 standard, have been popular for a number of years and will continue to attract the home computer user and the casual business computer user because of their low price and ubiquity. The 1200-bps modems, however, typically represented by the AT&T 212A standard, are becoming increasingly popular and reportedly represent 85 percent of current personal computer modem sales. At 4 times the speed of AT&T 103-compatible modems, the 212A lessens the lengthy wait (and associated telephone line costs) of transferring data files and retrieving entries from online database services. Moreover, the 212A is compatible with the 103 standard—it is actually 2 modems in 1—meaning that it can communicate with the widely established base of 103 users at 300 bps, as well as communicate with other 212A users.

It should be noted, however, that not all 1200-bps modems are compatible with the 212A. A sizable number of modems compatible with the Racal-Vadic VA3400

standard are also in use and the 2 cannot communicate. Therefore modem buyers should find out what modem is at the other end before they make a purchase decision. They might also want to consider a triple modem provided by Racal-Vadic or Anderson Jacobson, a device with 2 modems in 1 which can communicate with both the 212A and Racal-Vadic standards.

Until recently, 1200 bps was the fastest speed at which modems could communicate in full-duplex mode, or 2-way simultaneous transmission, over the telephone network. Almost all personal computers are designed to communicate in full-duplex mode only, and cannot operate with half-duplex modems. Now, several modem vendors provide 2400-bps full-duplex modems which are attractive to corporate personal computer users. The 2400-bps modems are available from such vendors as Concord Data, Rixon, Racal-Vadic, Codex, Kinex, NEC, and Siemens. Users should be aware, however, that most of these vendors are implementing or attempting to implement a new modulation scheme called V.22 Bis. V.22 Bis is not yet an approved standard, although it is expected to meet final approval at the CCITT plenary session in May 1984. V.22 Bis employs a frequency modulation (FM) technique, which is uncommon for low-/medium-speed modems, and is incompatible with half-duplex 2400-bps modem standards such as the AT&T 201 and CCITT V.26; it is also incompatible with a proposed 4800-/2400-bps full-duplex/dial standard, CCITT V.26 Ter. To add to the confusion, CCITT Recommendation V.22 (without the Bis suffix) is a 1200-bps standard only, and although CCITT V.22 Bis specifies a fallback data rate of 1200 bps using V.22 modulation, some vendors are incorporating a fallback data rate in the AT&T 212A mode. Obviously, prospective users of the new 2400-bps full-duplex/dial modems would be wise to secure guarantees of compatibility with whatever is at the other end of their transmission facility.

Because of the growing number of personal computers in the corporate environment, potential large users should consider the level of service and support provided by the vendor. Many high-speed modem vendors that traditionally service and support large computer installations tend to view personal computer modems as a low-margin/consumer-oriented enterprise, and are not entering the low-speed marketplace. Therefore, corporate users who want to install large numbers of 212A-type modems at their central computer may have to go with a "non-traditional" supplier. They must make sure that rackmounted modem models are available for central-site placement as well as standalone versions for the end users, and that the modem vendor can provide an adequate on-site maintenance agreement. Very few of the vendors listed in this survey provide the kind of service

Personal Computer Modems

expected by large users.

Other pitfalls await the unwary buyer of personal computer modems. For example, a modem advertised "for personal computers" may not work with all personal computers. Some prospective users still do not realize that a computer needs more than a modem in order to communicate over telephone lines. Modems communicate data in serial fashion—1 data bit at a time over the telephone wires—while computers transmit data in parallel fashion, 1 whole byte or word of data (several bits) at a time. This requires special hardware/software for converting parallel to serial formats; a special code and/or protocol for communicating data over the telephone "highways"; and a hardware serial interface (usually RS-232C) or other computer-specific interface adapter to fit the vagaries of many personal computers.

The software itself varies from simple terminal emulation packages to sophisticated communication software, and is available from a variety of personal computer software houses and from some modem vendors. The terminal emulation packages are fine for the beginner, but users with more complex needs—such as sending and receiving disk files or transmitting data error-free—require the more sophisticated software, with names like PC-Talk, ASCOM, Crosstalk, and Smartcom II. Most personal computer manufacturers also offer a communication or I/O card that inserts into one of the computer's backplane slots, and only requires an external modem for complete communication (additional software may or may not be required in this case). A couple of dozen or more communication programs are now on the market, ranging in price from $30 to $200, the majority of them compatible with CP/M operating systems and/or the more popular personal computers from IBM, Apple, and Radio Shack.

Alternatively, some independent vendors are now packaging a modem and I/O converter onto a single plug-in card with communication software sometimes thrown in as part of the deal. These packages simplify the chore of choosing a personal computer communication "system," taking the guesswork out of the buying decision and hence ideal for the novice. Only 1 item need be purchased instead of 2 or 3 separate devices, and it should work from the very first time it is plugged in. Personal computer manufacturers are themselves beginning to realize the advantages of a packaged communication system; IBM is said to be developing its own packaged modem with software for its PC/XT.

The capabilities of plug-in modems vary greatly, however, and sophisticated users will probably require communication features not supported by plug-in modem combos. These users will still need to go the route of purchasing an external modem, preferably one that is compatible with and matches the capabilities of the desired communication software. Users who comtemplate upgrading either their modems or their personal computer in the near future should also consider separate communication components in order to protect at least part of their communication investment.

Unfortunately, standalone modems can become a Pandora's box to an unsuspecting user. For example, many of the 103- and 212A-type modems now on the market were designed for communicating terminals; they will not work with a personal computer that is coupled with communication software because of a difference in EIA interface port signal assignments. The EIA RS-232C standard is the most popular data communications interface and consists of an external 25-pin connector, used for passing data along with communication control signals. Briefly, a display terminal requires that pin number 8 (carrier detect) on the RS-232C interface be "high," or on, all of the time. Most communication software packages designed for personal computers, on the other hand, require that pin 8 be high only when the modem carrier signal is present. Modems originally designed for the personal computer marketplace, such as the popular Hayes Smartmodem, are already adjusted for this difference; some other modems go one step further, providing switch-selection between communicating terminal or personal computer operation (Bytcom's 212AD has this capability). Most standalone modems designed prior to 1983, however, will probably not work when attached to personal computers.

Some personal computers need to have Data Terminal Ready (DTR, pin 6) fixed permanently in the high position. Thus the modem always sees the personal computer in an operational condition (when in fact it may be idle or off), and will keep the telephone connection open until physically disconnected. This condition has been known to cause phone lines to remain inadvertantly connected overnight or over a weekend, unnoticed by the users and resulting in exorbitant phone bills. An open line is also an invitation for unscrupulous third parties to breach an otherwise secure system. If users need secure dial-up communication, they should ensure that their personal computers do not require DTR high.

Interface problems in general are in fact common. Sometimes, personal computers are configured to look like a data communicating device (DCE), such as a modem, in order to attach directly to a host computer. This makes communication with a modem impossible, because the RS-232C ports on the modem and personal computer are configured exactly alike; a crossover cable must be implemented to reverse the signals and ensure communication. Other oddball interface problems can and do crop up, so when buying a standalone modem the prospective user should determine beforehand that it will work with his personal computer. Users should ask their computer or software dealer for a list of compatible standalone modems, and be prepared to make adjustments themselves for an unsanctioned modem: most modem vendors will not spend the time or expense adjusting their product to a single personal computer, and most computer stores do not have the communication expertise to help their users, either.

Although the preceding might sound discouraging, it can even get worse; there are many other considerations when buying a modem. For instance, many modem models presented in this survey include an integral—or optional
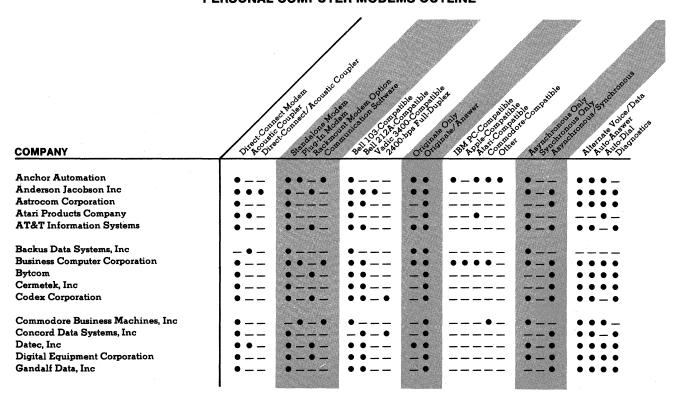

Personal Computer Modems

integral—automatic number dialer. An auto-dialer permits its users to store frequently called telephone numbers and dial them at the press of a button, a useful but often expensive feature. The user must decide whether the extra convenience is worth the auto-dialer's cost, or whether he can dial the numbers manually just as easily. Another convenience feature is that auto-dialer functions—and often modem communication parameters—can usually be selected directly from the personal computer keyboard for loading into the modem. The thing to look for here is non-volatile storage of auto-dialer and modem parameters, since a temporary power shortage or brownout will lose the modem's prestored program and entail a lengthy re-setting of modem parameters. Users shopping for sophisticated modems should determine that battery backup is available, or that a desired model uses non-volatile RAM memory.

Bell 212A-type modem buyers should look for another potential drawback. Although the Bell 212A standard specifies 1200-bps communication in **either** asynchronous (start/stop) or synchronous modes, some 212A manufacturers provide 1200 bps in asynchronous mode only. Most personal computer users will be interested only in the asynchronous data rate, because of simplicity and compatibility with many online services; but for those who require synchronous transmission, such as IBM mainframe communication using BSC or SNA protocols, the "stripped-down" 212As will not be acceptable.

The final consideration in purchasing a personal computer modem is **where** one is purchased. Most personal computer stores and outlets will carry 1 or more modem lines, but rest assured that the selection will be small. Perhaps the best thing to do is to call the prospective modem vendor and obtain a list of the distributors or retail outlets in one's immediate area. And finally, upon contacting the retailer be sure to ascertain the level of support he provides, or whether telephone consultation is available, and check out the warranty and repair procedures. These measures could save a lot of grief later on when and if problems do develop.

This edition of the product survey presents specifications and pricing on **over 140 modem models marketed by 41 vendors**. Listings in the Survey are arranged alphabetically by vendor name, and then by specific modem model. Each model entry is further divided into 10 logical categories that define Application, Packaging, Operating Parameters, Dialing, Call Answering, Personal Computer Requirements, Software-Supported Menus/Operator Messages, Diagnostics/Indicators, Other Features/Options, and Cost/Service. Specific topic areas within each category are further delineated with a solid dot (*). The Personal Computer Modem Outline below is a quick reference guide to vendors whose product parameters match specific user requirements. The Outline parameters define modem type, packaging, modem compatibility, transmission mode, personal computer compatibility, transmission technique (async/sync), and special features.

PERSONAL COMPUTER MODEMS OUTLINE

COMPANY	Direct-Connect Modem	Acoustic Coupler	Direct-Connect/Acoustic Coupler	Standalone Modem	Plug-In Modem	Rackmount Modem Option	Communication Software	Bell 103-Compatible	Bell 212A-Compatible	Vadic 3400-Compatible	2400-bps Full-Duplex	Originate Only	Originate/Answer	IBM PC-Compatible	Apple-Compatible	Atari-Compatible	Commodore-Compatible	Other	Asynchronous Only	Synchronous Only	Asynchronous/Synchronous	Alternate Voice/Data	Auto-Answer	Auto-Dial	Diagnostics
Anchor Automation	●	—	—	●	●	—	●	●	—	—	—	●	●	●	—	●	●	●	●	—	—	●	●	●	—
Anderson Jacobson Inc	●	●	●	●	—	●	—	●	●	●	—	●	●	—	—	—	—	—	●	—	●	●	●	●	●
Astrocom Corporation	●	—	—	●	—	—	—	●	●	—	—	—	●	—	—	—	—	—	—	—	●	●	●	●	●
Atari Products Company	●	●	—	●	—	—	—	●	—	—	—	—	●	—	—	●	—	—	●	—	—	—	—	●	—
AT&T Information Systems	●	—	—	●	—	●	—	●	●	—	—	●	●	—	—	—	—	—	●	—	●	●	●	—	●
Backus Data Systems, Inc	—	●	—	●	—	—	—	●	—	—	—	●	●	—	—	—	—	—	●	—	—	—	—	—	—
Business Computer Corporation	●	—	—	●	●	—	●	●	●	—	—	—	●	●	●	●	●	—	●	—	—	●	●	●	●
Bytcom	●	—	—	●	—	●	—	●	●	—	—	—	●	—	—	—	—	—	—	—	●	●	●	●	●
Cermetek, Inc	●	—	—	●	—	—	—	●	●	—	—	—	●	—	—	—	—	—	—	—	●	●	●	●	●
Codex Corporation	●	—	—	●	—	●	—	●	●	—	●	—	●	—	—	—	—	—	●	—	—	●	●	—	●
Commodore Business Machines, Inc	●	—	—	—	●	—	●	●	—	—	—	—	●	—	—	—	●	—	●	—	—	●	●	●	—
Concord Data Systems, Inc	●	—	—	●	—	—	—	—	●	—	●	—	●	—	—	—	—	—	●	—	—	●	●	—	●
Datec, Inc	●	●	—	●	—	●	—	●	●	—	—	●	●	—	—	—	—	—	●	—	—	●	●	●	●
Digital Equipment Corporation	●	—	—	●	—	●	—	●	●	—	—	—	●	—	—	—	—	—	●	—	●	●	●	●	●
Gandalf Data, Inc	●	—	—	●	—	—	—	●	●	—	—	—	●	—	—	—	—	—	—	—	●	●	●	●	●

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COMPANY	Direct-Connect Modem	Acoustic Coupler	Direct-Connect/Acoustic Coupler	Standalone Modem	Plug-In Modem	Rackmount Modem Option	Communication Software	Bell 103-Compatible	Bell 212A-Compatible	Vadic 3400-Compatible	2400-bps Full-Duplex	Originate Only	Originate/Answer	IBM PC-Compatible	Apple-Compatible	Atari-Compatible	Commodore-Compatible	Other	Asynchronous Only	Synchronous Only	Asynchronous/Synchronous	Alternate Voice/Data	Auto-Answer	Auto-Dial	Diagnostics
General DataComm Industries, Inc	●			●		●		●	●				●						●		●	●	●		●
Hayes Microcomputer Products, Inc	●			●	●		●	●	●				●	●	●			●	●		●	●	●		●
Intelligent Technologies Int'l Corp	●			●		●	●	●					●	●					●			●	●	●	
The Int'l Modem Exchange Corp (TIMECOR)	●				●			●					●		●		●		●				●		
Lexicon Corporation	●	●	●	●				●					●						●			●			
MFJ Enterprises		●		●			●	●					●						●						
Micro-Baud Systems, Inc	●			●			●		●				●						●				●	●	
Microcom	●			●					●				●						●		●		●	●	●
Microperipheral Corporation	●			●	●		●	●					●	●		●		●	●			●	●	●	
Multi-Tech Systems, Inc	●			●	●		●	●	●				●	●	●			●	●			●	●	●	●
Novation	●	●		●	●		●	●	●				●		●				●			●	●	●	●
Omnitec Data	●			●			●	●	●				●						●		●	●	●	●	●
Penril	●			●			●		●				●						●		●	●	●		●
Prentice Corporation	●			●			●		●				●						●		●	●	●	●	●
Racal-Vadic Inc	●	●		●		●		●	●	●	●	●	●						●		●	●	●	●	●
Rixon Inc	●			●	●	●	●	●	●		●		●	●					●		●	●	●	●	●
SSM Microcomputer Products, Inc	●			●	●		●	●	●				●	●	●				●				●	●	
Tandy Corporation/Radio Shack	●	●		●				●	●				●					●	●		●		●	●	
Tek-Com	●	●		●				●				●	●					●	●		●	●	●	●	
Texas Instruments, Inc	●			●				●					●					●	●						
Tri-Data	●			●		●			●				●						●			●	●	●	●
Universal Data Systems Inc	●			●		●		●	●				●						●		●	●	●	●	●
Ven-Tel Inc	●	●		●	●	●		●	●			●	●	●					●				●	●	●
Visionary Electronics	●			●			●	●	●				●						●				●	●	
Wolfdata	●				●		●		●				●	●				●	●			●	●	●	●
Zoom Telephonics, Inc	●				●		●	●					●		●				●						

PERSONAL COMPUTER MODEMS FEATURES

APPLICATION

This Features Section specifies whether the modem is compatible with an equivalent Bell System modem, with a modem from another vendor or with a different communication standard, or with other modems from the same manufacturer only. All modems in the survey are designed to operate over the public telephone network (DDD—Direct Distance Dial), although some may be adaptable to private leased-line communication networks. Specific topics covered within the section include the following:

Bell 103 Compatibility ● modems compatible with the Bell System (now AT&T Information Services) 103 standard communicate in a range from 0 to 300 bps, and are also compatible with Bell 113 originate only/answer only modems and Bell 108 private line modems.

Bell 212A Compatibility ● modems compatible wtih the Bell System (now AT&T Information Services) 212A standard communicate at 1200 bps, and can also communicate with Bell 103-compatible modems at 0 to 300 bps.

Personal Computer Compatibility ● designates specific personal computer(s) with which a modem is designed to work, if applicable. Modems without a specific personal computer appellation can work with any system, assuming proper interface connections and control signal designations.

FCC Certification ● modems designed for direct connection to the telephone network, without acoustic coupling, require FCC certification under Docket 19528 Part 68. Modems that are not FCC certified (excluding acoustic couplers) require a line coupling device called a Data Access Arrangement (DAA). The DAA is a network protection device that limits the modem output power and protects the network from hazardous voltages. DAAs are extra-cost items available in a variety of configurations depending on the modem complexity, and are available from a variety of vendors. Most direct-connect modems in this survey are FCC certified, thus saving users the expense and inconvenience of purchasing a DAA.

PACKAGING

This Features Section defines the physical packaging of the modem as a standalone direct-connect unit for tabletop placement; as an acoustic coupler, which is also a standalone unit except with rubber "cups" for cradling a telephone handset; or as a plug-in board that would fit into a specific type of personal computer. Communications software for specific personal computers may also be supplied with either standalone or plug-in modems, as an extra-cost option or packaged with the basic modem; when provided, the software is noted as being supplied on diskette, cassette tape, or stored internally on ROM (read-only memory) or RAM (random access memory).

Personal Computer Modems

OPERATING PARAMETERS

This Features Section presents details on modem operating parameters. The section defines transmission mode, synchronization, data rate(s), originate/answer mode, modulation, and electrical interface. The operating parameters are defined under the following topics:

Transmission Mode ● the direction that data is transmitted over a communications link is defined as simplex, half-duplex, or full-duplex. All modems in this survey are either half-duplex or full-duplex units.

Half-Duplex ● defines 2-way transmission between 2 points, but in only 1 direction at a time.

Full-Duplex ● defines 2-way simultaneous transmission between 2 points.

Synchronization ● data is transmitted either asynchronously or synchronously.

Asynchronous Transmission ● also referred to as start/stop transmission; frames each transmitted character with a start bit and 1 or 2 stop bits. The interval between successive characters can vary in time without effecting the transmission, but the interval between successive bits within a character is identical. Synchronization between transmitting and receiving devices is achieved on a character-by-character basis by each character's start and stop bits, which define the beginning and end of data.

Synchronous Transmission ● transmits data in a continuous stream; the time interval between successive bits within a character and successive characters is constant. Synchronization between transmitting and receiving devices is achieved through synchronization bits or characters at the beginning of each transmission.

Modulation ● the method that the modem uses to alter its carrier frequency with respect to the data signal received from the data terminal equipment (personal computer). The modem industry uses several different modulation techniques. Some are simple such as FSK (Frequency Shift Keying), which is employed for asynchronous transmission up to 1800 bps; some are complex such as QAM (Quadrature Amplitude Modulation), which is used for synchronous transmission speeds up to 9600 bps. Each modulation technique is advantageous to a specific application. Communicating modems at each end of a data link must employ the identical modulation technique.

Data Rate ● the data rate, or speed, of a modem is measured in bits per second (bps). Ten bits per second is equivalent to 1 character per second; therefore, a 1200-bps modem can transmit and receive data at the rate of 120 characters (letters, digits) per second. The data rate of the modem must be matched to that of the personal computer, printer, and/or other attached equipment.

Originate/Answer Mode ● modems covered in this survey are either originate only (they cannot accept a call), or originate/answer.

Electrical Interface ● the connection between data terminating equipment (DTE) and data circuit equipment (DCE); i.e., the personal computer and the modem. The interface passes digital data and control signals between devices, but can differ electrically depending on the application. Modems in this survey are equipped with the following electrical interfaces: EIA Standard RS-232C (international version CCITT V.24); current loop; TTL; and other special interfaces or adapters designed to fit the peculiarities of specific personal computers.

EIA Standard RS-232C ● the most common electrical interface standard used throughout the industry; however, exact conformation to the standard is typically not followed by vendors because most vendor products use only the connections necessary for operation, and because some connections are used for functions that differ among vendor products. The RS-232C interface is a 25-pin connector that supports transmission at data rates up to 20K bps at distances up to 50 feet between DTE and DCE.

Current Loop ● an electrical interface that employs telegraph technology. Data is transferred in the form of current pulses at rates up to 150 bps. Two signaling standards exist: neutral, or unipolar, in which signaling is performed by switching DC current on or off; and polar, or bipolar, in which signaling is performed by positive or negative DC current pulses. Signal current standards are 20 or 60

milliamperes. Current-loop interfaces are most commonly associated with teletype machines and communicating terminals, and are rare among personal computers.

TTL ● transistor-to-transistor logic. An industry-standard, digital, non-communication interface used to connect 2 digital devices. Often employed with plug-in modems, connecting the modem directly to the personal computer data bus.

DIALING

This Features Section details the methods employed for dialing calls through a modem. All of the modems in this survey can be used to dial-out; some require a regular telephone for calls to be manually placed, some contain an integral telephone keypad, and some allow dialing from the personal computer keyboard. Modems with an integral automatic dialer store telephone numbers for later dialing at the press of a button. Most of the features in this section are explanations of auto-dial functions, and/or of the ability to alternate voice and data communications through the modem. Specific topics include the following:

Automatic Dial ● a modem feature that automatically dials a pre-stored number from modem memory. Auto-dialers can store 1 or up to dozens of telephone numbers, depending on the model, with varying or user-definable lengths. Modems support pulse (rotary) and/or tone dialing techniques; some telephone networks and database services may require 1 method or the other.

Tandem Dial ● an auto-dialer feature that permits dialing through a PBX (private branch exchange) or other in-house or on-campus switching system; requires dialing a specific digit to get into the public telephone network, and the recognition of 2 separate dial tones. Some auto-dialers, in addition or instead of tandem dialing, provide blind dialing which is designed for systems employing non-standard dial tones. Blind dialers dial the first digit; pause for a predetermined length of time (usually 5 seconds); and then dial the telephone number.

Single Keystroke Dial ● a convenience feature for auto-dialing; allows dialing a complete telephone number with a single keystroke.

Multiple Re-Dial ● some auto-dialers will re-dial a busy or unanswered phone number for an established number of tries, or until the call is answered. The number of re-tries may sometimes be programmable by the user, depending on the auto-dialer.

Linked List Dialing ● sometimes called alternate dialing, this feature allows alternate numbers to be dialed in case the first number is busy/does not answer. Useful when dialing computers with alternate number capability.

Alternate Voice/Data ● some modems allow either voice or data to be alternately routed through the modem. This is usually accomplished by attaching a regular telephone to the modem and toggling a voice/data switch on the modem; by attaching a special telephone with an exclusion key on the handset cradle (when a talk/data switch is not supplied); or by attaching a regular telephone and entering keyboard commands to the personal computer (takes the place of a talk/data switch).

CALL ANSWERING

The majority of modems represented in this survey support call answering, which may be in manual, and sometimes automatic, mode. Auto-answer allows the user to accept messages on his personal computer unattended; the modem automatically responds to the ringing signal of an incoming call by generating an auto-answer tone (2025 Hz) and by connecting the personal computer.

PERSONAL COMPUTER REQUIREMENTS

This Features Section defines personal computer requirements to attach modems designed for those specific personal computers. Such requirements can include a minimum amount of main memory; a specific operating system; single or dual disk drives; a video monitor; or various (or all) of the preceding.

SOFTWARE-SUPPORTED MENUS/OPERATOR MESSAGES

Modems expressly designed for personal computers can often be configured from the user's keyboard. Some of these modems

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Personal Computer Modems

provide user-friendly screen menus or message prompting to assist in selecting basic modem communication parameters, auto-dialer functions, and other parameters outlined in this Features Section. Most of these modems also provide screen messages to inform the user of call progress, and/or list available commands; display modem status; or provide a "help" file for online instruction.

DIAGNOSTICS/INDICATORS

Diagnostic test functions provided by a specific modem and visual indicators defining modem operating status are detailed in this section. Diagnostic testing for personal computer modems is usually implemented by a simple modem self-test, or local analog loopback. More complex requirements, such as testing a remote modem (requiring the same make and model at both ends) or testing private leased phone lines, requires remote analog/digital tests or other end-to-end testing procedures. Modem diagnostic capabilities and indicators are defined under the following topics:

Self-Test ● depending on the vendor, a self-test of modem memory and processor circuitry or a performance test conducted on the transmit and receive circuits of a modem (local analog loopback). The local analog test is typically performed by introducing a random or continuous bit pattern into the modem's transmitter input, looping the transmitter output back into the modem's own receiver input, and comparing the returned bit pattern with the original bit pattern to detect errors.

Analog Loopback ● described above, the local analog loopback determines the integrity of a local modem by looping its own data (on the telephone line side) back on itself and comparing the results. A remote analog loopback is initiated in response to a command received from the remote modem at the opposite end of the communications link, typically the central site modem.

Digital Loopback ● a diagnostic method used with bit error rate testing to determine the integrity of the local or remote modem. The technique also allows the data terminating equipment (DTE; personal computer) to conduct self testing. The data terminating equipment is disconnected from the modem and its send and receive paths are looped together. The digital output of the modem receiver (the personal computer side) is looped to the digital input

of the modem transmitter. A bit error rate test is conducted from the remote modem at the opposite end of the data link. A bit stream from the modem's random pattern generator is transmitted to the modem under test; the received bit pattern is then looped back and retransmitted to the remote modem where it is compared with the generated pattern to detect bit errors and to determine the bit error rate. A remote digital loopback is established in response to a command received from the remote modem at the opposite end of the communications link, typically the central site modem.

Visual Indicators ● front panel indicator lamps (LEDs, LCDs) that present a visual indication of operating status, including key EIA interface signal status such as Request-to-Send (RTS), Clear-to-Send (CTS), Carrier Detect (DCD), and Data Set Ready (DSR); test or error conditions; and high-speed mode.

OTHER FEATURES/OPTIONS

Features and options associated with a specific modem are presented in this Section. Topics include the following:

File Transfers ● includes software for sending and receiving disk files to and from a central computer. Unattended file transfers are sometimes referred to as store-and-forward.

Text Editing ● some communication software packages provide rudimentary text editing, allowing the user to alter online database retrievals and other text; usually not as comprehensive as separate word processing software.

Error Control ● specifies the method by which some modems can detect and sometimes correct transmission errors generated over the phone line. The most sophisticated technique, cyclic redundancy checking (CRC 16), sends an error detection algorithm along with the data stream and retransmits any errored blocks of data.

COST/SERVICE

This Features Section provides single-unit pricing for a basic unit without options. Option pricing and quantity discounts are provided where applicable. Service is defined as provided by the vendor or third-party service organization; field or factory repairs. Field service locations are provided where available.

PERSONAL COMPUTER MODEMS LISTINGS

■ ANCHOR AUTOMATION

6624 Valjean Avenue, Van Nuys, CA 91406 ● 213-997-6493

☐ **Signalman Mark I Modem**

Application ● compatible with Bell 103 modems ● FCC Certified

Packaging ● standalone direct-connect modem

Operating Parameters ● full-duplex asynchronous at rates to 300 bps ● originate/answer modes ● FSK modulation ● RS-232C DTE interface

Dialing ● manual dial via telephone ● supports alternate voice/data via talk/data switch plus regular telephone

Call Answering ● manual answer

Personal Computer Requirements ● none supported

Software Supported Menus/Operator Messages ● none supported

Diagnostics/Indicators ● none supported

Other Features/Options ● operating power derived from 9-volt battery

Cost/Service ● basic price $99 ● quantity discounts to dealers only ● 1-year warranty ● own service; factory service, 2-day turnaround from date received

☐ **Signalman Mark II Modem**

Application ● compatible with Bell 103 modems ● personal computer compatibility for Atari computers ● FCC Certified

Packaging ● standalone direct-connect modem

Operating Parameters ● full-duplex asynchronous at rates up to 300 bps ● originate/answer modes ● FSK modulation ● Atari 9-pin (male connector) DTE interface

Dialing ● manual dial via telephone ● supports alternate voice/data via talk/data switch plus regular telephone

Call Answering ● manual answer

Personal Computer Requirements ● requires Atari personal computer with communication software installed

Software Supported Menus/Operator Messages ● none supported

Diagnostics/Indicators ● none supported

Other Features/Options ● operating power derived from 9-volt battery

Cost/Service ● basic price $99 ● quantity discounts to dealers only ● 1-year warranty ● own service; factory service, 2-day turnaround time from date received

☐ **Signalman Mark III Modem**

Application ● compatible with Bell 103 modems ● personal computer compatibilty for Texas Instruments (TI) computers ● FCC Certified

Packaging ● standalone direct-connect modem

Operating Parameters ● full-duplex asynchronous at rates up to 300 bps ● originate/answer modes ● FSK modulation ● RS-232C DTE interface with special pin assignments for TI computers

Dialing ● manual dial via telephone ● supports alternate voice/data via talk/data switch plus regular telephone

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Personal Computer Modems

Call Answering ● manual answer

Personal Computer Requirements ● requires any Texas Instruments personal computer with communication software installed

Software Supported Menus/Operator Messages ● none supported

Diagnostics/Indicators ● none supported

Other Features/Options ● none supported ● operating power derived from 9-volt battery

Cost/Service ● basic price $139 ● quantity discounts to dealers only ● 1-year warranty ● own service; factory service, 2-day turnaround time from date received

☐ Signalman Mark IV Modem

Application ● compatible with Bell 103 modems ● personal computer compatibility for Commodore/PET computers ● FCC Certified

Packaging ● standalone direct-connect modem ● communications software supplied on tape cassette

Operating Parameters ● full-duplex asynchronous at rates up to 300 bps ● originate/answer modes ● FSK modulation ● special-connector DTE interface for Commodore/PET computers

Dialing ● manual dial via telephone ● supports alternate voice/data via talk/data switch plus regular telephone

Call Answering ● manual answer

Personal Computer Requirements ● requires basic Commodore/PET computer

Software Supported Menus/Operator Messages ● communication/other parameters established via screen menus

Diagnostics/Indicators ● none supported

Other Features/Options ● operating power derived from 9-volt battery

Cost/Service ● basic price $169 ● quantity discounts to dealers only ● 1-year warranty ● own service; factory service, 2-day turnaround time from date received

☐ Signalman Mark V Modem

Application ● compatible with Bell 103 modems ● personal computer compatibility for Osborne I computers ● FCC Certified

Packaging ● standalone direct-connect modem

Operating Parameters ● full-duplex asynchronous at rates up to 300 bps ● originate/answer modes ● FSK modulation ● Osborne 9-pin female connector DTE interface

Dialing ● manual dial via telephone ● supports alternate voice/data via talk/data switch plus regular telephone

Call Answering ● manual answer

Personal Computer Requirements ● requires Osborne I computer with communication software installed

Software Supported Menus/Operator Messages ● none supported

Diagnostics/Indicators ● none supported

Other Features/Options ● operating power derived from 9-volt battery

Cost/Service ● basic price $129 ● quantity discounts to dealers only ● 1-year warranty. ● own service; factory service, 2-day turnaround time from date received

☐ Signalman Mark VI Modem

Application ● compatible with Bell 103 modems ● personal computer compatibility for IBM PC ● FCC Certified

Packaging ● plug-in board ● communications software supplied on diskette

Operating Parameters ● full-duplex asynchronous at 300 bps ● orignate/answer modes ● FSK modulation ● IBM PC bus DTE interface

Dialing ● manual dial via telephone; terminal keyboard dial; automatic dial with storage for 8 telephone numbers of 9 characters each ● pulse dial ● tone dial ● tandem dial ● single keystroke dial ● multiple re-dial ● supports alternate voice/data via talk/data switch plus regular telephone

Call Answering ● manual answer or automatic answer automatically connects the personal computer to the phone line

Personal Computer Requirements ● requires basic IBM PC; fits any address port (slot) ● IBM A or B diskette

Software Supported Menus/Operator Messages ● communications/other parameters established via screen menus ● operator messages including help file, list commands/menu

Diagnostics/Indicators ● none supported

Other Features/Options ● file transfers ● concurrent operations including data display/printer transfer; data display/disk transfer ● operating power derived from the personal computer ● supports optional RS-232C digital interface for local printer or alternate communications line

Cost/Service ● basic price $279 suggested; option pricing not available ● quantity discounts to dealers only ● 1-year warranty ● own service; factory service, 2-day turnaround from date received

☐ Signalman Mark VII Modem

Application ● compatible with Bell 103 modems ● FCC Certified

Packaging ● standalone direct-connect modem

Operating Parameters ● full-duplex asynchronous at rates to 300 bps ● originate/answer modes ● FSK modulation ● RS-232C DTE interface, with pin positions adaptable to any personal computer interface standard

Dialing ● manual dial via telephone; terminal keyboard dial; automatic dial with storage for 8 telephone numbers of 9 characters each ● pulse dial ● tone dial ● tandem dial ● single keystroke dial ● multiple re-dial ● supports alternate voice/data via talk/data switch plus regular telephone

Call Answering ● manual answer or automatic answer automatically connects the personal computer to the phone line

Personal Computer Requirements ● any personal computer with RS-232C interface and communications software installed

Software Supported Menus/Operator Messages ● dialing parameters established via screen menus ● operator messages including help file, list commands/menu

Diagnostics/Indicators ● none supported

Other Features/Options ● none supported

Cost/Service ● basic price $159 (suggested) ● quantity discounts (to dealers only) ● 1-year warranty ● own service; factory service, 2-day turnaround from date received

■ ANDERSON JACOBSON, INC

521 Charcot Avenue, San Jose, CA 95131 ● 408-263-8520

☐ AJ 242-A Acoustic Coupler

Application ● compatible with Bell 103 modems

Packaging ● acoustic coupler

Operating Parameters ● full-duplex asynchronous at rates up to 450 bps ● originate only mode ● FSK modulation ● RS-232C or current-loop DTE interface

Dialing ● manual dial via telephone

Call Answering ● none supported

Personal Computer Requirements ● none supported

Software Supported Menus/Operator Messages ● none supported

Diagnostics/Indicators ● front-panel LEDs for modem power and carrier detect

Other Features/Options ● none supported

Personal Computer Modems

Cost/Service ● basic price $295 ● quantity discounts available ● 1-year warranty ● own service; field service and factory service at 1 of 23 U.S. service center locations

☐ AJ 245 Modem

Application ● compatible with Bell 103 modems ● FCC Certified

Packaging ● standalone direct-connect modem

Operating Parameters ● full-duplex asynchronous at rates up to 450 bps ● originate only mode ● FSK modulation ● RS-232C or current-loop DTE interface

Dialing ● manual dial via telephone

Call Answering ● none supported

Personal Computer Requirements ● none supported

Software Supported Menus/Operator Messages ● none supported

Diagnostics/Indicators ● front-panel LEDs for modem power and carrier detect

Other Features/Options ● none supported

Cost/Service ● basic price $245 ● quantity discounts available ● 1-year warranty ● own service; field service and factory service at 1 of 23 U.S. service center locations

☐ AJ 247 Acoustic Coupler/Modem

Application ● compatible with Bell 103 modems ● FCC Certified

Packaging ● standalone direct-connect modem or acoustic coupler

Operating Parameters ● full-duplex asynchronous at rates up to 450 bps ● originate only mode ● FSK modulation ● RS-232C or current-loop DTE interface

Dialing ● manual dial via telephone

Call Answering ● none supported

Personal Computer Requirements ● none supported

Software Supported Menus/Operator Messages ● none supported

Diagnostics/Indicators ● front-panel LEDs for modem power and carrier detect

Other Features/Options ● none supported

Cost/Service ● basic price $295 ● quantity discounts available ● 1-year warranty ● own service; field service and factory service at 1 of 23 U.S. service center locations

☐ AJ 347 Acoustic Coupler/Modem

Application ● compatible with Bell 103 ● FCC Certified

Packaging ● standalone direct-connect modem or acoustic coupler

Operating Parameters ● full-duplex asynchronous at rates to 450 bps ● originate/answer modes ● FSK modulation ● RS-232C DTE interface

Dialing ● manual dial via telephone

Call Answering ● manual answer in direct-connect or acoustic coupler mode; or automatic answer automatically connects the personal computer to the phone line in direct-connect mode

Personal Computer Requirements ● none supported

Software Supported Menus/Operator Messages ● none supported

Diagnostics/Indicators ● front-panel LEDs for modem power and carrier detect

Other Features/Options ● none supported

Cost/Service ● basic price $365 ● quantity discounts available ● 1-year warranty ● own service; field service or factory service at 1 of 23 U.S. service center locations

☐ AJ 1211 Modem

Application ● compatible with Bell 103, Bell 212A modems ● FCC Certified

Packaging ● standalone direct-connect modem

Operating Parameters ● full-duplex asynchronous at 300/1200 bps; synchronous at 1200 bps ● orignate/answer modes ● FSK/PSK modulation ● RS-232C DTE interface

Dialing ● manual dial via telephone ● optional automatic dial with storage for 10 telephone numbers of 9 characters each ● pulse dial ● tandem dial ● single keystroke dial ● multiple re-dial up to 9 times ● supports alternate voice/data via talk/data switch plus regular telephone

Call Answering ● manual answer or automatic answer automatically connects the personal computer to the phone line

Personal Computer Requirements ● none supported

Software Supported Menus/Operator Messages ● none supported

Diagnostics/Indicators ● analog loopback, digital loopback, front-panel LEDs for 8 key EIA interface signals

Other Features/Options ● recognizes calling modem and automatically adjusts to proper mode (Bell 103 or 212A) ● no-option mode sets modem for factory-specified "standard" configuration ● optional rackmounting

Cost/Service ● basic price $625; auto-dial option pricing $675 ● quantity discounts available ● 1-year warranty ● own service; field service or factory service at 1 of 23 U.S. service center locations

☐ AJ 1232 Acoustic Coupler/Modem

Application ● compatible with Bell 103, Bell 212A modems ● FCC Certified

Packaging ● standalone direct-connect modem or acoustic coupler

Operating Parameters ● full-duplex asynchronous at 300 bps; synchronous or asynchronous at 1200 bps ● originate-only mode ● FSK, PSK modulation ● RS-232C DTE interface

Dialing ● manual dial via telephone

Call Answering ● none supported

Personal Computer Requirements ● none supported

Software Supported Menus/Operator Messages ● none supported

Diagnostics/Indicators ● self-test of modem circuitry, digital loopback, front-panel LEDs for 4 key EIA interface signals

Other Features/Options ● internal or external clocking

Cost/Service ● basic price $795 ● quantity discounts available ● 1-year warranty ● own service; field service or factory service at 1 of 23 U.S. service locations

☐ AJ 1233 Acoustic Coupler/Modem

Application ● compatible with Bell 103, Bell 212A, and Vadic 3400 Modems ● FCC Certified

Packaging ● standalone direct-connect modem or acoustic coupler

Operating Parameters ● full-duplex asynchronous at 300 bps; synchronous or asynchronous at 1200 bps ● originate-only mode ● FSK, PSK modulation ● RS-232C DTE interface

Dialing ● manual dial via telephone

Call Answering ● none supported

Personal Computer Requirements ● none supported

Software Supported Menus/Operator Messages ● none supported

Diagnostics/Indicators ● self-test of modem circuitry, digital loopback, front-panel LEDs for 4 key EIA interface signals

Other Features/Options ● internal or external clocking

Cost/Service ● basic price $845 ● quantity discounts available ● 1-year warranty ● own service; field service or factory service at 1 of 23 U.S. service center locations

☐ AJ 1234-A Acoustic Coupler/Modem

Application ● compatible with Vadic 3400 modems ● FCC Certified

Packaging ● standalone direct-connect modem or acoustic coupler

Personal Computer Modems

Operating Parameters • full-duplex asynchronous or synchronous at 150/300/600/1200 bps • originate only mode • FSK, PSK modulation • RS-232C DTE interface

Dialing • manual dial via telephone

Call Answering • none supported

Personal Computer Requirements • none supported

Software Supported Menus/Operator Messages • none supported

Diagnostics/Indicators • front-panel LEDs for modem power and 3 key EIA interface signals

Other Features/Options • internal or external clocking

Cost/Service • basic price $695 • quantity discounts available • 1-year warranty • own service; field service or factory service at 1 of 23 U.S. service center locations

☐ AJ 1256 Modem

Application • compatible with Vadic 3400 modems • FCC Certified

Packaging • standalone direct-connect modem

Operating Parameters • full-duplex asynchronous or synchronous at 150/300/600/1200 bps • originate/answer modes • FSK, PSK modulation • RS-232C DTE interface

Dialing • manual dial via telephone • supports alternate voice/data via talk/data switch plus regular telephone

Call Answering • manual answer or automatic answer automatically connects the personal computer to the phone line

Personal Computer Requirements • none supported

Software Supported Menus/Operator Messages • none supported

Diagnostics/Indicators • analog loopback, digital loopback, front-panel LEDs for 8 key EIA interface signals

Other Features/Options • internal or external clocking

Cost/Service • basic price $625 • quantity discounts available • 1-year warranty • own service; field service or factory service at 1 of 23 U.S. service center locations

☐ AJ 1259 Modem

Application • compatible with Bell 103, Bell 212A, and Vadic 3400 modems • FCC Certified

Packaging • standalone direct-connect modem

Operating Parameters • full-duplex asynchronous at 450/1200 bps; synchronous at 1200 bps • originate/answer modes • FSK, PSK modulation • RS-232C DTE interface

Dialing • manual dial via telephone • optional automatic dial with storage for 10 telephone numbers of 9 characters each • pulse dial • tandem dial • single keystroke dial • multiple re-dial up to 9 times • supports alternate voice/data via talk/data switch plus regular telephone

Call Answering • manual answer or automatic answer automatically connects the personal computer to the phone line

Personal Computer Requirements • none supported

Software Supported Menus/Operator Messages • none supported

Diagnostics/Indicators • self-test of modem circuitry, analog loopback, digital loopback, front-panel LEDs for 8 key EIA interface signals

Other Features/Options • recognizes calling modem and automatically adjusts to proper mode (Bell 103, 212A, or VA3400) • no-option mode sets modem for factory-specified "standard" configuration • optional rackmounting

Cost/Service • basic price $695; auto-dialer option pricing $775 • quantity discounts available • 1-year warranty • own service; field service or factory service at 1 of 23 U.S. service center locations

☐ AJ 1235 Acoustic Coupler/Modem

Application • compatible with Bell 103, Bell 212A, and Vadic 3400 modems • FCC Certified

Packaging • standalone direct-connect modem or acoustic coupler

Operating Parameters • full-duplex asynchronous at 450/1200 bps; synchronous at 1200 bps • originate only mode • FSK, PSK modulation • RS-232C DTE interface

Dialing • manual dial via telephone

Call Answering • none supported

Personal Computer Requirements • none supported

Software Supported Menus/Operator Messages • none supported

Diagnostics/Indicators • self-test of modem circuitry, digital loopback, front-panel LEDs for 4 key EIA interface signals

Other Features/Options • internal or external clocking

Cost/Service • basic price $795 • quantity discounts available • 1-year warranty • own service; field service or factory service at 1 of 23 U.S. service center locations

■ ASTROCOM CORPORATION

120 West Plato Boulevard, St. Paul, MN 55107 • 612-227-8651

☐ 212A

Application • compatible with Bell 103, Bell 212A • FCC Certified

Configuration • standalone direct-connect modem

Operating Parameters • full-duplex asynchronous at 300/1200 bps; synchronous at 1200 bps • originate/answer modes • FSK, PSK modulation • RS-232C DTE interface

Dialing • manual dial via telephone • optional automatic dial with storage for 2 telephone numbers of 24 characters each or 1 telephone number up to 48 characters • pulse dial • tone dial • supports alternate voice/data via exclusion-key telephone

Call Answering • manual answer or automatic answer automatically connects the personal computer to the phone line

Personal Computer Requirements • none supported

Software Supported Menus/Operator Messages • none supported

Diagnostics/Indicators • self-test of modem circuitry, analog loopback, digital loopback, front-panel LEDs for 8 key EIA interface signals

Other Features/Options • optional asynchronous to synchronous switch

Cost/Service • basic price $795; option pricing $895 with auto-dialer • quantity discounts available • 1-year warranty • own service; factory service with 2-day turnaround time

■ ATARI PRODUCTS COMPANY

P.O. Box 50047, San Jose, CA 95150 • 408-942-6790

☐ Atari 830 Acoustic Modem

Application • compatible with Bell 103 • FCC Certified

Packaging • acoustic coupler

Operating Parameters • full-duplex asynchronous at rates up to 300 bps • originate/answer modes • FSK modulation • connects to Atari computers indirectly via Atari 850 Interface module

Dialing • manual dial via telephone

Call Answering • manual answer

Personal Computer Requirements • requires Atari Home Computer with Atari 850 Interface module

Software Supported Menus/Operator Messages • none supported

Diagnostics/Indicators • front-panel LEDs for power, ready modes

Other Features/Options • none supported

Personal Computer Modems

Cost/Service ● basic price $200; 850 Interface module $220 ● 90-day warranty ● own service; factory service, returned to 1 of 1,200 service centers located around the U.S.

☐ Atari 835 Direct Connect Modem (Communicator II)

Application ● compatible with Bell 103 ● personal computer compatibility for all Atari computers ● FCC Certified

Packaging ● standalone direct-connect modem ● Telelink II communications software supplied on separate ROM cartridge

Operating Parameters ● half-/full-duplex asynchronous at rates to 300 bps ● serial I/O bus interface

Dialing ● terminal keyboard dial; automatic dial with storage for 2 telephone numbers ● pulse dial ● tandem dial ● single keystroke dial

Call Answering ● manual answer

Personal Computer Requirements ● requires any Atari Home Computer, minimum configuration

Software Supported Menus/Operator Messages ● communications/other parameters established via screen menus ● call progress

Diagnostics/Indicators ● front-panel LEDs for on/off, modem ready

Other Features/Options ● programmable automatic database log-on for online databases

Cost/Service ● basic price $280 ● 90-day warranty ● own service; factory service, returned to 1 of 1,200 service centers located around the U.S.

☐ Atari 1030 Direct Connect Modem

Application ● compatible with Bell 103 ● personal computer compatibility for all Atari computers ● FCC Certified

Packaging ● standalone direct-connect modem ● communications software supplied on ROM

Operating Parameters ● half-/full-duplex asynchronous at rates up to 300 bps ● FSK modulation ● serial I/O bus interface

Dialing ● manual dial via keyboard ● pulse dial ● tone dial

Call Answering ● manual answer

Personal Computer Requirements ● requires any Atari Home Computer, minimum configuration

Software Supported Menus/Operator Messages ● communications/other parameters established via screen menus ● call progress

Diagnostics/Indicators ● front-panel LEDs for modem power and online

Other Features/Options ● supports other communication software packages

Cost/Service ● pricing not announced ● 90-day warranty ● own service; factory service, returned to 1 of 1,200 service centers located around the U.S.

■ AT&T INFORMATION SYSTEMS

100 Southgate Parkway, P.O. Box 195, Morristown, NJ 07960 ● 201-898-8000

☐ Data Set 212AR—Dataphone 300/1200

Application ● compatible with Bell 212A modems ● FCC Certified

Packaging ● standalone direct-connect modem

Operating Parameters ● full-duplex asynchronous at 300/1200 bps; synchronous at 1200 bps ● FSK, PSK modulation ● RS-232C DTE interface

Dialing ● manual dial via telephone ● supports alternate voice/data

Call Answering ● manual answer or automatic answer automatically connects the personal computer to the phone line

Personal Computer Requirements ● none supported

Software Supported Menus/Operator Messages ● none supported

Diagnostics/Indicators ● self-test of modem circuitry, local and

remote analog loopback, digital loopback, front-panel LEDs for key EIA interface signals

Other Features/Options ● rackmount version available

Cost/Service ● $40 per month, rental only; $100 installation charge ● own service; field service; factory service

☐ Data Set 103JR

Application ● compatible with Bell 103 modems ● FCC Certified

Packaging ● standalone direct-connect modem

Operating Parameters ● full-duplex asynchronous at rates to 300 bps ● FSK modulation ● RS-232C DTE interface

Dialing ● manual dial via telephone ● supports alternate voice/data

Call Answering ● manual answer

Personal Computer Requirements ● none supported

Software Supported Menus/Operator Messages ● none supported

Diagnostics/Indicators ● local and remote analog loopback, digital loopback ● front-panel LEDs for key EIA interface signals

Other Features/Options ● rackmount version available

Cost/Service ● $28 per month, rental only; $130 installation charge ● own service; field service; factory service

■ BACKUS DATA SYSTEMS, INC

1440 Koll Circle, Suite 110, San Jose, CA 95112 ● 408-279-8711

☐ AC 312

Application ● compatible wtih Bell 103; optional Bell 202 compatible

Packaging ● acoustic coupler

Operating Parameters ● half-/full-duplex asynchronous at 300 bps; optional half-duplex asynchronous at 1200 bps ● originate only or originate/answer mode ● FSK modulation ● RS-232C DTE interface

Dialing ● manual dial via telephone

Call Answering ● manual answer optional

Personal Computer Requirements ● none supported

Software Supported Menus/Operator Messages ● none supported

Diagnostics/Indicators ● front-panel LEDs for power, carrier, DTR

Other Features/Options ● reverse channel for line turnaround commands, Bell 202 mode ● local copy capability

Cost/Service ● basic price $199; option pricing $250 for answer/originate; $495 for Bell 202 mode ● quantity discounts available ● 1-year warranty ● factory service

■ BUSINESS COMPUTER CORP (BIZCOMP)

P.O. Box 7498, Menlo Park, CA 94025 ● 408-745-1616

☐ PC:Intellimodem

Application ● compatible with Bell 212A modems ● personal computer compatibility for the IBM PC ● FCC Certified

Packaging ● plug-in board ● communications software supplied on diskette

Operating Parameters ● half- or full-duplex asynchronous at 300/1200 bps ● originate/answer modes ● FSK, PSK modulation ● PC bus DTE interface

Dialing ● manual dial via telephone; terminal keyboard dial; automatic dial with storage for 99 telephone numbers of 32 characters each ● pulse dial ● tone dial ● tandem dial ● single keystroke dial ● multiple re-dial, unlimited times ● supports an indefinite number of linked phone numbers ● supports alternate voice/data via keyboard-controlled talk/data function plus regular telephone

Call Answering ● manual answer or automatic answer automatically connects the personal computer to the phone line

Personal Computer Requirements ● requires 64K-byte main memory ● DOS 1.1/1.0/2.0 operating system ● single diskette

Personal Computer Modems

drive ● 80-column display

Software Supported Menus/Operator Messages ● communications/ other parameters established via screen label function keys ● adjusts both modem and communications parameters ● operator messages including no answer ringing, busy, online, help file, help prompts ● targeted at the novice; full status window display

Diagnostics/Indicators ● self-test of modem circuitry ● analog loopback ● 1 back panel LED, programmable for different functions

Other Features/Options ● file transfers ● automatic database log-on, programmable for any remote database ● supports different terminal/modem data rates; modem/terminal communication at 1200 bps (fixed) independent of phone line communication data capture ● automatic 300/1200 bps selection from directory ● integral audible monitor ● incoming call indication

Cost/Service ● basic price $499 ● quantity discounts available ● 2-year warranty ● own service; factory service

☐ Model 1012

Application ● compatible with Bell 103, Bell 212A modems ● FCC Certified

Packaging ● standalone direct-connect modem

Operating Parameters ● half-/full-duplex asynchronous at 300/ 1200 bps; synchronous at 1200 bps ● originate/answer modes ● FSK, PSK modulation ● RS-232C DTE interface

Dialing ● manual dial via telephone; terminal keyboard dial; automatic dial with storage for 99 telephone numbers of 32 characters each ● pulse dial ● tone dial ● tandem dial ● single keystroke dial ● multiple re-dial, unlimited number of times

Call Answering ● manual answer or automatic answer automatically connects the personal computer to the phone line

Personal Computer Requirements ● none supported

Software Supported Menus/Operator Messages ● none supported

Diagnostics/Indicators ● self-test of modem circuitry; analog loopback; digital loopback; 1 front-panel LED programmable for different functions

Other Features/Options ● programmable log-on message ● configurable via modem switches or terminal commands (requires communications software package, or can be manually driven from the keyboard using ASCII single-key commands)

Cost/Service ● basic price $649 ● quantity discounts available ● 2-year warranty ● own service; factory service

☐ Model 1022

Application ● compatible with Bell 103 modems ● FCC Certified

Packaging ● standalone direct-connect modem

Operating Parameters ● half-/full-duplex asynchronous at rates up to 300 bps ● originate/answer modes ● FSK modulation ● RS-232C DTE interface

Dialing ● manual dial via telephone; terminal keyboard dial; automatic dial with storage for 99 telephone numbers of 32 characters each ● pulse dial ● tone dial ● tandem dial ● single keystroke dial ● multiple re-dial unlimited number of times

Call Answering ● manual answer or automatic answer automatically connects the personal computer to the phone line

Personal Computer Requirements ● none supported

Software Supported Menus/Operator Messages ● none supported

Diagnostics/Indicators ● self-test of modem circuitry ● 1 front-panel LED programmable for different functions

Other Features/Options ● programmable log-on message ● configurable via modem switches or terminal commands (requires communications software package, or can be manually driven from the keyboard using ASCII single-key commands)

Cost/Service ● basic price $249 ● quantity discounts available ● 2-year warranty ● own service; factory service

☐ Model 1080

Application ● compatible wtih Bell 103 modems ● FCC Certified

Packaging ● standalone direct-connect modem ● optional communications software for Apple II and Commodore computers supplied on ROM

Operating Parameters ● half-/full-duplex asynchronous at rates up to 300 bps ● originate-only mode ● FSK modulation ● RS-232C DTE interface, with interface kits available for Apple, Commodore, and Atari personal computers

Dialing ● manual dial via telephone

Call Answering ● manual answer

Personal Computer Requirements ● Apple II (excluding Apple IIe) and Commodore users who purchase the interface kit **do not** require an RS-232C serial card

Software Supported Menus/Operator Messages ● none supported

Diagnostics/Indicators ● none supported

Other Features/Options ● operating power derived from the phone line

Cost/Service ● basic price $139; option pricing for interface kits (Apple II, Commodore, Atari) ranges from $30 to $75 ● quantity discounts available ● 2-year warranty ● own service; factory service

■ BYTCOM

2169 Francisco Boulevard, Suite H, San Rafael, CA 94901 ● 415-485-0700

☐ Bytcom 212AD

Application ● compatible with Bell 103, Bell 212A ● FCC Certified

Packaging ● standalone direct-connect modem

Operating Parameters ● full-duplex asynchronous at 300/1200 bps; synchronous at 300/1200 bps ● FSK, PSK modulation ● RS-232C DTE interface

Dialing ● manual dial via telephone; terminal keyboard dial; automatic dial with storage for 10 telephone numbers of 40 characters each ● pulse dial ● tone dial ● tandem dial ● single keystroke dial ● multiple re-dial up to 15 times; supports a linked list of 9 telephone numbers ● supports alternate voice/data via talk/data switch plus regular telephone ● can change between tone and pulse dial within the same stored number features

Call Answering ● manual answer or automatic answer automatically connects the personal computer to the phone line

Personal Computer Requirements ● none supported

Software Supported Menus/Operator Messages ● communications/ other parameters established via screen menus ● operator messages including no answer, busy, online, dialing, dead phone, invalid; single character or text response

Diagnostics/Indicators ● self-test of modem circuitry ● local and remote analog loopback, digital loopback ● front-panel LED's for modem ready/check; modem busy; high-speed; test mode; 3 key EIA interface signals

Other Features/Options ● compatible with popular communications software ● auto-parity, auto-data rate detection ● reference stored numbers via a user-selected name ● parameters stored in non-volatile memory, battery backed ● software disconnect capability ● 16-character answerback capability ● remote boot (for host CPU) ● rackmount available

Cost/Service ● basic price $695 ● quantity discounts available ● 2-year swap-out warranty ● own service; factory service

■ CERMETEK, INC

1308 Borregas Avenue, Sunnyvale, CA 94089-3565 ● 408-734-8150

☐ Info-Mate 212A

Application ● compatible with Bell 103, Bell 212A modems ● FCC Certified

Personal Computer Modems

Packaging ● standalone direct-connect modem

Operating Parameters ● full-duplex asynchronous at 110/300/1200 bps; synchronous at 1200 bps ● FSK, PSK modulation ● RS-232C DTE interface

Dialing ● manual dial via telephone; terminal keyboard dial; automatic dial with storage for 52 telephone numbers of 32 characters each ● pulse dial ● tone dial ● tandem dial ● single keystroke dial ● multiple re-dial up to 99 times, or alternate number up to 99 times; supports a linked list of 52 telephone numbers ● supports alternate voice/data via keyboard commands plus regular telephone ● during a data call, can put modem on "hold" and undertake voice communication, and then re-initiate data call without re-dialing

Call Answering ● manual answer or automatic answer automatically connects the personal computer to the phone line

Personal Computer Requirements ● none supported

Software Supported Menus/Operator Messages ● communications/other parameters established via screen prompts ● operator messages including busy; electronic call progress tone detection; dial; ring back; human voice; answer tone

Diagnostics/Indicators ● self-test of modem circuitry ● analog loopback; digital loopback ● front-panel LED's

Other Features/Options ● supports 5 auto-dialing procedures: dial last number, immediate, alternate, dial from memory, dial until answered ● memory can store log-on message(s) instead of phone numbers ● supports personel computers requiring EIA interface signal(s) to enable the keyboard

Cost/Service ● basic price $595 ● quantity discounts available ● 1-year warranty ● own service; factory service

■ CODEX CORPORATION

20 Cabot Boulevard, Mansfield, MA 02048 ● 617-364-2000

☐ 220 Modem

Application ● compatible with CCITT V.22 bis in high-speed mode; Bell 212A in fallback mode ● FCC Certified

Packaging ● standalone direct-connect modem

Operating Parameters ● full-duplex asynchronous, synchronous at 1200/2400 bps ● RS-232C DTE interface

Dialing ● manual dial via telephone

Call Answering ● manual answer or automatic answer automatically

Personal Computer Requirements ● none supported

Software Supported Menus/Operator Messages ● none supported

Diagnostics/Indicators ● unknown

Other Features/Options ● Model 224 is still undergoing Beta testing (not yet on the market)

Cost/Service ● basic price $1,195 ● quantity discounts available ● 1-year warranty ● own service; field service; factory service ● field service locations nationwide

☐ 5103 Data Modem

Application ● compatible with Bell 103 ● FCC Certified

Packaging ● standalone direct-connect modem

Operating Parameters ● full-duplex asynchronous at rates to 300 bps ● FSK modulation ● RS-232C DTE interface

Dialing ● manual dial via telephone ● supports alternate voice/data via regular telephone

Call Answering ● manual answer or automatic answer automatically connects the personal computer to the phone line

Personal Computer Requirements ● none supported

Software Supported Menus/Operator Messages ● none supported

Diagnostics/Indicators ● analog loopback; digital loopback ● front-panel LED's for key EIA interface signals

Other Features/Options ● rackmount version available

Cost/Service ● basic price $600; option pricing $300, rackmount ● quantity discounts available ● 1-year warranty ● own service; field service; factory service ● field service locations nationwide

☐ 5212R Data Modem

Application ● compatible with Bell 103, Bell 212A modems ● FCC Certified

Packaging ● standalone direct-connect modem

Operating Parameters ● full-duplex asynchronous at rates of 300/1200 bps; synchronous at 1200 bps ● originate/answer modes ● FSK, PSK modulation ● RS-232C DTE interface

Dialing ● manual dial via telephone ● supports alternate voice/data via talk/data switch plus regular telephone

Call Answering ● manual answer or automatic answer automatically connects the personal computer to the phone line

Personal Computer Requirements ● none supported

Software Supported Menus/Operator Messages ● none supported

Diagnostics/Indicators ● self-test of modem circuitry ● local and remote analog loopback, digital loopback ● front-panel LEDs for 4 key EIA interface signals; high-speed mode; modem check; test mode; make busy

Other Features/Options ● automatically adjusts to speed of incoming call ● integral abort timer automatically disconnects erroneous calls ● rackmount version available

Cost/Service ● basic price $695 ● quantity discounts available ● 1-year warranty ● own service; field service; factory service ● field service locations nationwide

■ COMMODORE BUSINESS MACHINES, INC/Computer Systems Division

681 Moore Road, King of Prussia, PA 19406 ● 215-337-7100

☐ Model 1600 VICMODEM

Application ● compatible with Bell 103 modems ● personal computer compatibility for Commodore 64 and VIC 20 ● FCC Certified

Packaging ● plug-in board ● communications software supplied on cassette tape

Operating Parameters ● half-/full-duplex asynchronous at rates up to 300 bps ● originate/answer modes ● FSK modulation ● plugs into specific user port in the Commodore 64 or VIC 20

Dialing ● manual dial via telephone ● supports alternate voice/data via external adapter

Call Answering ● manual answer

Personal Computer Requirements ● minimum configuration; VIC 20 or Commodore 64

Software Supported Menus/Operator Messages ● communications/other parameters established via screen menus ● operator messages including terminal ready

Diagnostics/Indicators ● back-panel LED for operating mode

Other Features/Options ● none supported

Cost/Service ● basic price $100 ● 90-day warranty ● dealer or factory service

☐ Model 1650 Automodem

Application ● compatible with Bell 103 modems ● personal computer compatibility for Commodore 64 and VIC 20 ● FCC Certified

Packaging ● plug-in board ● communications software supplied on cassette tape

Operating Parameters ● half-/full-duplex asynchronous at rates up to 300 bps ● originate/answer modes ● FSK modulation ● plugs

Personal Computer Modems

into specific user port in the Commodore 64 or VIC 20

Dialing ● manual dial via telephone; terminal keyboard dial; automatic dial with storage for 5 telephone numbers of 30 characters each, VIC 20; 10 numbers of 30 digits, Commodore 64 ● pulse dial ● single keystroke dial ● supports alternate voice/data via talk/data switch plus regular telephone

Call Answering ● manual answer or automatic answer automatically connects the personal computer to the phone line

Personal Computer Requirements ● minimum configuration, VIC 20 or Commodore 64

Software Supported Menus/Operator Messages ● communications/other parameters established via screen menus ● operator messages including terminal ready

Diagnostics/Indicators ● back-panel LED for operating mode

Other Features/Options ● none supported

Cost/Service ● basic price $150 ● 90-day warranty ● dealer or factory service

■ CONCORD DATA SYSTEMS

303 Bear Hill Road, Waltham, MA 02154 ● 617-890-1394

□ CDS 212

Application ● compatible with Bell 212A modems ● FCC Certified

Packaging ● standalone direct-connect modem

Operating Parameters ● full-duplex asynchronous or synchronous at 600/1200 bps; 0 to 300 bps optional ● originate/answer modes ● DPSK modulation ● RS-232C DTE interface

Dialing ● manual dial via telephone ● supports alternate voice/data via talk/data switch plus regular telephone

Call Answering ● manual answer or automatic answer automatically connects the personal computer to the phone line

Personal Computer Requirements ● none supported

Software Supported Menus/Operator Messages ● none supported

Diagnostics/Indicators ● self-test of modem circuitry ● analog loopback; digital loopback ● front-panel LEDs for modem power, signal quality, modem test, and 8 key EIA interface signals

Other Features/Options ● automatic adaptive equalizer for "superior" bit error rate performance

Cost/Service ● basic price $770 ● quantity discounts available ● 1-year warranty ● own service; factory service

□ CDS 224

Application ● compatible with CCITT V.22 bis and Bell 212A modems (in fallback mode) ● FCC Certified

Packaging ● standalone direct-connect modem

Operating Parameters ● full-duplex asynchronous or synchronous at 1200/2400 bps ● QAM modulation ● RS-232C DTE interface

Dialing ● manual dial via telephone

Call Answering ● manual answer or automatic answer automatically connects the personal computer to the phone line

Personal Computer Requirements ● none supported

Software Supported Menus/Operator Messages ● none supported

Diagnostics/Indicators ● self-test of modem circuitry ● analog loopback; digital loopback ● front-panel LEDs for 10 EIA interface signals and operating modes

Other Features/Options ● front-panel switch for sync/async mode ● optional front-panel private line/switched network (DDD) switch ● auto-dialer available in September 1983

Cost/Service ● basic price $995; option pricing $100 for private line/DDD switch ● quantity discounts available ● 1-year warranty ● own service; factory service

■ DATEC, INC

200 Eastowne Drive, Suite 116, Chapel Hill, NC 27514 ● 919-929-2135

□ Datec 30

Application ● compatible with Bell 103 modems

Packaging ● acoustic coupler

Operating Parameters ● half-/full-duplex asynchronous at rates up to 300 bps ● originate only mode ● FSK modulation ● RS-232C or 20-mA current-loop DTE interface

Dialing ● manual dial via telephone

Call Answering ● none supported

Personal Computer Requirements ● none supported

Software Supported Menus/Operator Messages ● none supported

Diagnostics/Indicators ● front-panel LEDs for transmit and receive data

Other Features/Options ● none supported

Cost/Service ● basic price $235 ● quantity discounts available ● 1-year warranty ● own service; factory service

□ Datec 32

Application ● compatible with Bell 103 modems

Packaging ● acoustic coupler

Operating Parameters ● half-/full-duplex asynchronous at rates up to 300 bps ● originate/answer modes ● FSK modulation ● RS-232C or 20-mA current-loop DTE interface

Dialing ● manual dial via telephone

Call Answering ● manual answer

Personal Computer Requirements ● none supported

Software Supported Menus/Operator Messages ● none supported

Diagnostics/Indicators ● front-panel LEDs for transmit and receive data

Other Features/Options ● neoprene cups filter out ambient noise

Cost/Service ● basic price $250 ● quantity discounts available ● 1-year warranty ● own service; factory service

□ Datec 33

Application ● compatible with Bell 103 modems ● FCC Certified

Packaging ● standalone direct-connect modem

Operating Parameters ● half-/full-duplex asynchronous at rates up to 300 bps ● originate/answer modes ● RS-232C DTE interface

Dialing ● manual dial via telephone

Call Answering ● manual answer

Personal Computer Requirements ● none supported

Software Supported Menus/Operator Messages ● none supported

Diagnostics/Indicators ● self-test of modem circuitry ● analog loopback; digital loopback ● front-panel LEDs for test mode, modem check, and 8-key EIA interface signals

Other Features/Options ● none supported

Cost/Service ● basic price $219 ● quantity discounts available ● 1-year warranty ● own service; factory service

□ Datec 212

Application ● compatible with Bell 103, Bell 212A modems ● FCC Certified

Packaging ● standalone direct-connect modem

Operating Parameters ● half-/full-duplex asynchronous at 300/1200 bps or synchronous at 1200 bps ● originate/answer modes ● FSK, DPSK modulation ● RS-232C DTE interface

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Dialing ● manual dial via telephone ● optional automatic dial with storage for 2 telephone numbers of 24 characters each, or 1 number up to 48 characters long ● pulse dial ● tone dial ● tandem dial ● supports alternate voice/data via talk/data switch plus regular telephone

Call Answering ● manual answer or automatic answer automatically connects the personal computer to the phone line

Personal Computer Requirements ● none supported

Software Supported Menus/Operator Messages ● dialing parameters established via screen menus

Diagnostics/Indicators ● self-test of modem circuitry ● analog loopback; digital loopback ● front-panel LEDs for test mode, modem check, high-speed mode, and 8 key EIA interface signals

Other Features/Options ● integral line equalizer ● built-in "A" control for multiple key telephone systems ● enhanced auto-dialer option due for September 1983 ● rackmount available

Cost/Service ● basic price $595 ● option pricing $695 with auto-dialer ● quantity discounts available ● 1-year warranty ● own service; factory service

■ DIGITAL EQUIPMENT CORPORATION

146 Main Street, Maynard, MA 01754 ● 617-897-5111

□ DF02 Modem

Application ● compatible with Bell 103 modems ● FCC Certified

Packaging ● standalone direct-connect modem

Operating Parameters ● full-duplex asynchronous at rates up to 300 bps ● originate/answer modes ● FSK modulation ● RS-232C DTE interface

Dialing ● manual dial via telephone; terminal keyboard dial; optional automatic dial with storage for 1 telephone number of 16 characters ● pulse dial ● tandem dial ● single keystroke dial ● supports alternate voice/data via talk/data switch plus regular telephone

Call Answering ● manual answer or automatic answer automatically connects the personal computer to the phone line

Personal Computer Requirements ● none supported

Software Supported Menus/Operator Messages ● control character response

Diagnostics/Indicators ● self-test of modem circuitry ● analog loopback; digital loopback ● front-panel LEDs for 2 key EIA interface signals and off-hook

Other Features/Options ● rackmount available

Cost/Service ● basic price $450; option pricing $650 with auto-dial unit ● 90-day warranty ● own service; field service ● field service locations in all major U.S. cities, continental U.S.

□ DF03 Modem

Application ● compatible with Bell 103, Bell 212A modems ● FCC Certified

Packaging ● standalone direct-connect modem

Operating Parameters ● full-duplex asynchronous at 300/1200 bps; synchronous at 1200 bps ● originate/answer modes ● FSK, DPSK modulation ● RS-232C DTE interface

Dialing ● manual dial via telephone; terminal keyboard dial; optional automatic dial with storage for 1 telephone number of 16 characters ● pulse dial ● tandem dial ● single keystroke dial ● supports alternate voice/data via talk/data switch plus regular telephone

Call Answering ● manual answer or automatic answer automatically connects the personal computer to the phone line

Personal Computer Requirements ● none supported

Software Supported Menus/Operator Messages ● control character response

Diagnostics/Indicators ● self-test of modem circuitry ● analog

loopback; digital loopback ● front-panel LEDs for 3 key EIA interface signals and high-speed mode

Other Features/Options ● full featured model—identical to Western Electric modems ● rackmount available

Cost/Service ● basic price $895; option pricing $1,095 with auto-dial unit ● 90-day warranty ● own service; field service

■ GANDALF DATA, INC

1019 South Noel Avenue, Wheeling, IL 60090 ● 312-541-6060

□ SAM 212A

Application ● compatible with Bell 103, Bell 212A modems ● FCC Certified

Packaging ● standalone direct-connect modem

Operating Parameters ● full-duplex asynchronous at 300/1200 bps; synchronous at 1200 bps ● FSK, DPSK modulation ● RS-232C DTE interface

Dialing ● manual dial via telephone; automatic dial with storage for 1 telephone number of 32 characters ● pulse dial ● tandem dial ● supports alternate voice/data via talk/data switch plus regular telephone

Call Answering ● manual answer or automatic answer automatically connects the personal computer to the phone line

Personal Computer Requirements ● none supported

Software Supported Menus/Operator Messages ● communications/other parameters established via screen prompts

Diagnostics/Indicators ● self-test of modem circuitry ● analog loopback; digital loopback ● front-panel LEDs for 6 key EIA interface signals, high-speed mode, and modem test

Other Features/Options ● adapts automatically to match the speed of incoming signal ● enhanced auto-dial available in November

Cost/Service ● basic price $618 ● quantity discounts available ● 1-year warranty ● own service; field service or factory service ● field service in 8 U.S. locations and 6 Canadian locations

■ GENERAL DATA COMM INDUSTRIES, INC (GDC)

One Kennedy Avenue, Danbury, CT 06810 ● 203-797-0711

□ GDC 103J-M

Application ● compatible with Bell 103 modems ● FCC Certified

Packaging ● standalone direct-connect modem

Operating Parameters ● full-duplex asynchronous at rates up to 300 bps ● originate/answer modes ● FSK modulation ● RS-232C DTE interface

Dialing ● manual dial via telephone ● supports alternate voice/data via talk/data switch plus regular telephone

Call Answering ● manual answer or automatic answer automatically connects the personal computer to the phone line

Personal Computer Requirements ● none supported

Software Supported Menus/Operator Messages ● none supported

Diagnostics/Indicators ● analog loopback; digital loopback ● front-panel LEDs for modem test, answer mode, carrier/data, and data/talk

Other Features/Options ● none supported

Cost/Service ● basic price $250 ● quantity discounts available ● 1-year warranty ● own service; field service or factory service ● field service locations in 44 major cities in the continental U.S.

□ Data Comm 212M

Application ● compatible with Bell 103, Bell 212A modems ● FCC Certified

Packaging ● standalone direct-connect modem

Operating Parameters ● full-duplex asynchronous at 300 or 1200 bps; synchronous at 1200 bps ● originate or answer modes ● FSK,

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PSK modulation ● RS-232C DTE interface

Dialing ● manual dial via telephone ● supports alternate voice/data via talk/data switch plus regular telephone

Call Answering ● manual answer or automatic answer automatically connects the personal computer to the phone line

Personal Computer Requirements ● none supported

Software Supported Menus/Operator Messages ● none supported

Diagnostics/Indicators ● analog loopback; digital loopback ● front-panel LEDs for loopback/make busy mode; high-speed mode; idle/talk mode; test mode; and 4 key EIA signal indicators

Other Features/Options ● rackmount available ● data rate tolerance; capable of running at 3 percent overspeed at 1200 bps ● brownout protection

Cost/Service ● basic price $750 ● quantity discounts available ● 1-year warranty ● own service; field service or factory service ● field service locations in 44 major cities in the continental U.S.

■ HAYES MICROCOMPUTER PRODUCTS, INC

5923 Peachtree Industrial Boulevard, Norcross, GA 30092 ● 404-449-8791

□ Micromodem II

Application ● compatible with Bell 103 modems ● personal computer compatibility for Apple II and IIe ● FCC Certified

Packaging ● plug-in board with external DAA module ● (optional) communications software (terminal program) supplied on ROM

Operating Parameters ● half-/full-duplex asynchronous at 110/300 bps ● originate/answer modes ● FSK modulation ● fits any Apple slot

Dialing ● terminal keyboard dial ● pulse dial

Call Answering ● automatic answer automatically connects the personal computer to the phone line

Personal Computer Requirements ● minimum Apple II/IIe configuration

Software Supported Menus/Operator Messages ● communications/other parameters command driven ● operator messages including dialing; hung up; awaiting carrier

Diagnostics/Indicators ● self-test of modem circuitry ● LED for off-hook indication

Other Features/Options ● optional terminal emulation program (Smartcom I) for all Apple computers

Cost/Service ● basic price $379; option pricing $409 with Smartcom I Terminal Emulation program ● 2-year limited warranty ● 90-day warranty, all software ● own service; factory service

□ Micromodem 100

Application ● compatible with Bell 103 modems ● personal computer compatibility for any S-100 computer ● FCC Certified

Packaging ● plug-in board with external DAA module

Operating Parameters ● half-/full-duplex asynchronous at 110/300 bps ● originate/answer modes ● FSK modulation ● S-100 bus interface

Dialing ● requires a user-provided or purchased program to dial out

Call Answering ● requires a user-provided or purchased program to answer

Personal Computer Requirements ● Z80 CPU running 4-MHz clock rate; does not require serial interface

Software Supported Menus/Operator Messages ● none supported

Diagnostics/Indicators ● self-test of modem circuitry ● LED for off-hook indication

Other Features/Options ● optional terminal emulation program required, or requires user-programming or other vendor software

Cost/Service ● basic price $399; option pricing for terminal emulation program (disk) $25 ● 2-year limited warranty ● 90-day warranty, all software ● own service; factory service

□ Smartmodem 300

Application ● compatible with Bell 103 modems ● FCC Certified

Packaging ● standalone direct-connect modem ● optional communications software for the IBM PC supplied on diskette

Operating Parameters ● half-/full-duplex asynchronous at rates up to 300 bps ● originate/answer modes ● FSK modulation ● RS-232C DTE interface

Dialing ● terminal keyboard dial; pulse dial or tone dial with a pause character

Call Answering ● manual answer or automatic answer automatically connects the personal computer to the phone line

Personal Computer Requirements ● none supported

Software Supported Menus/Operator Messages ● none supported

Diagnostics/Indicators ● self-test of modem circuitry ● front-panel LEDs for high-speed mode, auto-answer and key EIA interface signals

Other Features/Options ● optional Smartcom II communications software for the IBM PC, or optional Terminal Emulation program for Apple II and IIe's

Cost/Service ● basic price $289 ● option pricing $119, Smartcom II software; $99, Terminal Emulation program ● 2-year limited warranty ● 90-day warranty, all software ● own service, factory service

□ Smartmodem 1200

Application ● compatible with Bell 103, Bell 212A modems ● FCC Certified

Packaging ● standalone direct-connect modem ● optional Smartcom II communications software for the IBM PC supplied on diskette

Operating Parameters ● half-/full-duplex asynchronous at 300/1200 bps ● originate/answer modes ● FSK, PSK modulation ● RS-232C DTE interface

Dialing ● terminal keyboard dial ● pulse dial or tone dial ● tandem dial (with a pause character), re-dial of last number dialed

Call Answering ● manual answer or automatic answer automatically connects the personal computer to the phone line

Personal Computer Requirements ● none supported

Software Supported Menus/Operator Messages ● none supported

Diagnostics/Indicators ● self-test of modem circuitry ● front-panel LEDs for high-speed mode, auto-answer, and 6 key EIA interface signals

Other Features/Options ● optional Smartcom II communications software for the IBM PC, or optional Terminal Emulation program for Apple II and IIe's

Cost/Service ● basic price $699 ● option pricing $119, Smartcom II software; $99, Terminal Emulation program ● 2-year limited warranty ● 90-day warranty, all software ● own service; factory service

□ Smartmodem 1200B

Application ● compatible with Bell 103, Bell 212A ● personal computer compatibility for IBM PC or XT ● FCC Certified

Packaging ● plug-in board ● communications software supplied on diskette

Operating Parameters ● half-/full-duplex asynchronous at 300/1200 bps ● originate/answer modes ● FSK, PSK modulation ● IBM bus DTE interface

Dialing ● terminal keyboard dial ● pulse dial ● tone dial ● tandem dial (with a pause character) ● re-dial of last number dialed ● supports alternate voice/data via keyboard command plus regular telephone

Personal Computer Modems

Call Answering ● manual answer or automatic answer automatically connects the personal computer to the phone line

Personal Computer Requirements ● requires 96K-byte main memory ● IBM DOS 1.10 or 1.00 operating system ● 1 diskette drive ● 80-column display

Software Supported Menus/Operator Messages ● communications/other parameters established via screen menus ● operator messages tell operator the modem status

Diagnostics/Indicators ● self-test of modem circuitry

Other Features/Options ● file transfers in 3 modes (store and forward) ● error control CRC-16 (requires 2 1200Bs, or Hayes terminal program) ● concurrent operations including data display/printer transfer, data display/disk transfer, printing/disk transfer ● built-in speaker allows audible line monitoring ● programmable message/display parameters ● backwards screen scroll

Cost/Service ● basic price $599 ● 2-year limited warranty ● 90-day warranty, all software ● own service; factory service

■ THE INTERNATIONAL MODEM EXCHANGE CORPORATION (TIMECOR)

Four Longfellow Place, P.O. Box 8928, Boston, MA 02114 ● 617-720-4090

□ The Operator

Application ● compatible with Bell 103 modems ● personal computer compatibility for Apple II, II Plus, and IIe; Franklin Ace 100 and 1000; Basis 108 ● FCC Certified

Packaging ● plug-in board

Operating Parameters ● half-/full-duplex asynchronous at 110/300 bps ● originate/answer modes ● FSK modulation ● Apple II bus DTE interface

Dialing ● manual dial via telephone ● pulse dial ● tone dial

Call Answering ● manual answer or automatic answer automatically connects the personal computer to the phone line

Personal Computer Requirements ● any minimum configuration, plus a communications software package

Software Supported Menus/Operator Messages ● operator messages including status messages and communication parameters retrievable via communications software; not provided

Diagnostics/Indicators ● none supported

Other Features/Options ● compatible with the following software programs: ASCII Express Pro; Data Capture; Modem Magic II; Term Exec; Transcend I, II, and III; VisiTerm; Z-Term

Cost/Service ● basic price $160 ● 6-month warranty ● own service; factory or dealer service

■ INTELLIGENT TECHNOLOGIES INTERNATIONAL CORPORATION

151 University Avenue, Palo Alto, CA 94301 ● 415-328-2411

□ PC Express

Application ● compatible with Bell 103 modems ● personal computer compatibility for IBM Personal Computer ● FCC Certified

Packaging ● plug-in board ● communications software supplied on diskette

Operating Parameters ● half-/full-duplex ● asynchronous at rates up to 300 bps ● FSK modulation ● IBM bus DTE interface

Dialing ● terminal keyboard dial, automatic dial with user-programmable calling parameters ● supports alternate voice/data via softkey talk/data switch plus regular telephone

Call Answering ● manual answer or automatic answer automatically connects the personal computer to the phone line

Personal Computer Requirements ● requires 256K-byte main memory ● PC DOS (MS-DOS) operating system ● 2 double-sided diskette drives ● monochrome or color display

Software Supported Menus/Operator Messages ● communications/

other parameters established via screen menus, or command driven

Diagnostics/Indicators ● none supported

Other Features/Options ● telephone management system with unattended file transfers (store and forward), programmable automatic database log-on for remote databases, simple text editing, electronic mail, error control (ARQ), and remote terminal access using the PC as a host ● DEC VT100/VT52 emulation ● free membership to The Source ● accommodates external modem up to 19.2K bps ● optional IBM SNA 3270 emulation; emulates cluster controller, 3770 RJE station ● optional multiboard attaches to additional terminals ● other user-programmable functions

Cost/Service ● basic price $895, option pricing $1,295 with SNA emulation ● 1-year warranty ● own service; factory service

■ LEXICON CORPORATION

1541 NW 65th Avenue, Fort Lauderdale, FL 33313 ● 305-792-4400

□ LEX-10 Modem

Application ● compatible with Bell 103 modems ● FCC Certified

Packaging ● standalone direct-connect modem

Operating Parameters ● full-duplex asynchronous at rates to 300 bps ● originate/answer modes ● FSK modulation ● RS-232C DTE interface

Dialing ● manual dial via telephone

Call Answering ● manual answer

Personal Computer Requirements ● none supported

Software Supported Menus/Operator Messages ● none supported

Diagnostics/Indicators ● front-panel LED for carrier detect

Other Features/Options ● optional Ni-Cad battery operation

Cost/Service ● basic price $119, option pricing $159 (battery operation) ● quantity discounts available at 10 to 35%, quantities of 10 to 500 ● 90-day warranty ● own service; factory service

□ LEX-11 Acoustic Modem

Application ● compatible with Bell 103 modems

Packaging ● acoustic coupler

Operating Parameters ● half-/full-duplex asynchronous at rates up to 300 bps ● orignate/answer modes ● FSK modulation ● DTE interface

Dialing ● manual dial via telephone

Call Answering ● manual answer

Personal Computer Requirements ● none supported

Software Supported Menus/Operator Messages ● none supported

Diagnostics/Indicators ● self-test of modem circuitry ● front-panel LEDs for power on, ready (carrier)

Other Features/Options ● optional Ni-Cad battery operation; optional CCITT compatibility

Cost/Service ● basic price $145, option pricing $185 (battery operation); CCITT option adds $31 ● quantity discounts available at 10 to 35%, quantities of 10 to 500 ● 90-day warranty ● own service; factory service

□ LEX-12 Direct Handset & Acoustic Modem

Application ● compatible with Bell 103 modems ● FCC Certified

Packaging ● standalone direct-connect modem or acoustic coupler

Operating Parameters ● full-duplex asynchronous at rates up to 300 bps ● originate/answer modes ● FSK modulation ● RS-232C DTE interface

Dialing ● manual dial via telephone ● supports alternate voice/data via talk/data switch plus regular telephone in direct-connect mode

Call Answering ● manual answer

Personal Computer Requirements ● none supported

Personal Computer Modems

Software Supported Menus/Operator Messages • none supported

Diagnostics/Indicators • front-panel LEDs for power-on, ready (carrier)

Other Features/Options • optional Ni-Cad battery operation

Cost/Service • basic price $165, option pricing $205 (battery operation) • quantity discounts available at 10 to 35%, quantities of 10 to 500 • 90-day warranty • own service; factory service

☐ LEX-15 Direct Handset & Acoustic Modem

Application • compatible with Bell 103 and Bell 202 standards • FCC Certified

Packaging • standalone direct-connect modem or acoustic coupler

Operating Parameters • full-duplex asynchronous at rates to 300 bps; or half-duplex asynchronous at 1200 bps • originate/answer modes • FSK modulation • RS-232C DTE interface

Dialing • manual dial via telephone • supports alternate voice/data via talk/data switch plus regular telephone in direct-connect mode

Call Answering • manual answer

Personal Computer Requirements • none supported

Software Supported Menus/Operator Messages • none supported

Diagnostics/Indicators • front-panel LEDs for power-on, ready (carrier)

Other Features/Options • optional Ni-Cad battery option • 5-bps reverse channel

Cost/Service • basic price $325, option pricing $395 (battery operation) • quantity discounts available at 10 to 35%, quantities of 10 to 500 • 90-day warranty • own service; factory service ·

■ MFJ ENTERPRISES

921 Louisville Road, Starksville, MS 39759 • 601-323-5869

☐ MFJ 1232 Acoustic Coupled Modem

Application • compatible with Bell 103 modems

Packaging • acoustic coupler • optional Apple II/II Plus communications software supplied on cassette

Operating Parameters • half-/full-duplex asynchronous at rates to 300 bps • originate/answer modes • FSK modulation • RS-232C, TTL, and CMOS DTE interface

Dialing • manual dial via telephone

Call Answering • manual answer

Personal Computer Requirements • none supported

Software Supported Menus/Operator Messages • none supported

Diagnostics/Indicators • front-panel LEDs for power on, carrier detect

Other Features/Options • cassette recorder port • can run on 2 9-volt batteries

Cost/Service • basic price $129.95, option pricing MFJ 1231 (Apple II terminal emulation software) $39.95 • quantity discounts 35 to 40% for dealers only • 1-year warranty • own service; factory service

■ MICRO-BAUD SYSTEMS, INC

3393 De La Cruz Boulevard, Santa Clara, CA 95050 • 408-727-5275

☐ MB212A

Application • compatible with Bell 212A modems • FCC Certified

Packaging • standalone direct-connect modem

Operating Parameters • full-duplex asynchronous at 300/1200 bps • FSK, PSK modulation • RS-232C DTE interface

Dialing • manual dial via telephone; terminal keyboard dial; automatic dial with storage for 5 telephone numbers of 32 characters each • pulse dial • tone dial • tandem dial (blind dialing) • multiple re-dial up to 15 times; supports a linked list of 2 telephone numbers

Call Answering • manual answer or automatic answer automatically connects the personal computer to the phone line

Personal Computer Requirements • none supported

Software Supported Menus/Operator Messages • communications/other parameters established via screen menus • operator messages including no connect, online, ready, clear, idle, off-line

Diagnostics/Indicators • self-test of modem circuitry • 1 front-panel LED for carrier detect

Other Features/Options • integral speaker monitor; auto-parity; auto-data rate detection • non-volatile RAM; no need for battery backup

Cost/Service • basic price $650 • quantity discounts available; quantity of 10 or more, $375 • 1-year warranty • own service; factory service

■ MICROCOM

1400A Providence Highway, Norwood, MA 02062 • 617-762-9310

☐ RX/300

Application • compatible with Bell 103 modems • FCC Certified

Packaging • standalone direct-connect modem

Operating Parameters • half-/full-duplex asynchronous at rates up to 300 bps • FSK modulation • RS-232C DTE interface

Dialing • manual dial via telephone; terminal keyboard dial; automatic dial with storage for 9 telephone numbers of 38 characters each • pulse dial • tone dial • tandem dial • single keystroke dial • multiple re-dial up to an infinite number of times

Call Answering • manual answer or automatic answer automatically connects the personal computer to the phone line

Personal Computer Requirements • none supported

Software Supported Menus/Operator Messages • communications/other parameters established via command structures or internal DIP switches • operator messages including connect/no connection; modem status

Diagnostics/Indicators • self-test of modem circuitry • digital loopback • front-panel LEDs for 4 key EIA interface signals; off-hook; and high-speed mode

Other Features/Options • file transfers • error control (CRC-16; ARQ) • supports different terminal/modem data rates in a range up to 9600 bps (DTE to modem) • supports 3 additional digital interfaces for local printer, second modem, alternate communications line • integral flow-control; includes an SDLC-like protocol • 4K-byte battery-backed RAM memory • audio monitor for call monitoring • upgradeable to 1200-bps operation

Cost/Service • basic price $495 • quantity discounts available • 1-year warranty • own service; factory service

☐ RX/1200

Application • compatible with Bell 103, Bell 212A modems • FCC Certified

Packaging • standalone direct-connect modem

Operating Parameters • half-/full-duplex asynchronous at 300/1200 bps; synchronous at 1200 bps • RS-232C DTE interface

Dialing • automatic dial with storage for 9 telephone numbers of 38 characters each • pulse dial • tone dial • tandem dial • single keystroke dial • multiple re-dial up to an infinite number of times

Call Answering • automatic answer automatically connects the personal computer to the phone line

Personal Computer Requirements • none supported

Software Supported Menus/Operator Messages • communications/other parameters established via command structures or internal DIP switches • operator messages including connect/no connection; modem status

Diagnostics/Indicators • self-test of modem circuitry • digital loopback • front-panel LEDs for 4 key EIA interface signals; off-hook; and high-speed mode

Personal Computer Modems

Other Features/Options ● file transfers ● error control (CRC-16; ARQ), supports different terminal/modem data rates in a range up to 9600 bps (DTE to modem) ● supports 3 additional digital interfaces for local printer, second modem, alternate communications line, integral flow-control; includes an SDLC-like protocol ● 4K-byte battery-backed RAM memory ● audio monitor for call monitoring

Cost/Service ● basic price $895 ● quantity discounts available ● 1-year warranty ● own service; factory service

□ PCS/300

Application ● compatible with Bell 103 modems ● FCC Certified

Packaging ● standalone direct-connect modem

Operating Parameters ● half-/full-duplex asynchronous at rates up to 300 bps ● FSK modulation ● RS-232C DTE interface

Dialing ● automatic dial with storage for 9 telephone numbers of 38 characters each ● pulse dial ● tone dial ● tandem dial ● single keystroke dial ● multiple re-dial up to an infinite number of times

Call Answering ● automatic answer automatically connects the personal computer to the phone line

Personal Computer Requirements ● none supported

Software Supported Menus/Operator Messages ● communications/other parameters established via command structures ● operator messages including connect/no connect; modem status

Diagnostics/Indicators ● self-test of modem circuitry ● digital loopback ● front-panel LEDs for 2 key EIA interface signals; off-hook; mail mode/mail mode full

Other Features/Options ● unattended file transfers (store and forward) ● error control (CRC-16; ARQ) ● supports different terminal/modem data rates in a range up to 9600 bps (DTE to modem) ● supports 3 additional digital interfaces for local printer, second modem, alternate communications line ● integral flow control; includes an SDLC-like protocol ● 16K- to 64K-byte battery-backed RAM memory ● audio monitor for call monitoring ● upgradeable to 1200-bps operation ● integral time-of-day clock

Cost/Service ● basic price $596, option pricing $695 with 64K-byte RAM ● quantity discounts available ● 1-year warranty ● own service; factory service

□ PCS/1200

Application ● compatible with Bell 103, Bell 212A modems ● FCC Certified

Packaging ● standalone direct-connect modem

Operating Parameters ● half-/full-duplex asynchronous at 300/1200 bps; synchronous at 1200 bps ● RS-232C DTE interface

Dialing ● automatic dial with storage for 9 telephone numbers of 38 characters each ● pulse dial ● tone dial ● tandem dial ● single keystroke dial ● multiple re-dial up to an infinite number of times

Call Answering ● automatic answer automatically connects the personal computer to the phone line

Personal Computer Requirements ● none supported

Software Supported Menus/Operator Messages ● communications/other parameters established via command structures ● operator messages including connect/no connect; modem status

Diagnostics/Indicators ● self-test of modem circuitry ● digital loopback ● front-panel LCD's for 2-key EIA interface signals; off-hook; mail mode/mail mode full

Other Features/Options ● unattended file transfers (store and forward) ● error control (CRC-16; ARQ) ● supports different terminal/modem data rates in a range up to 9600 bps (DTE to modem) ● supports 3 additional digital interfaces for local printer, second modem, alternate communications line ● integral flow control; includes an SDLC-like protocol ● 16K- or 64K-byte battery-backed RAM memory ● audio monitor for call monitoring ● integral time-of-day clock

Cost/Service ● basic price $995, option pricing $1,095 with 64K-

byte RAM ● quantity discounts available ● 1-year warranty ● own service; factory service

■ MICROPERIPHERAL CORPORATION

2565 152 Avenue, NE, Redmond, WA 98052 ● 206-881-7544

□ P Connection

Application ● compatible with Bell 103 modems ● personal computer compatibility for the IBM PC ● FCC Certified

Packaging ● plug-in board ● communications software supplied on diskette

Operating Parameters ● half-/full-duplex asynchronous at rates to 300 bps ● originate/answer modes ● FSK modulation ● PC bus DTE interface

Dialing ● terminal keyboard dial; automatic dial ● pulse dial ● tone dial ● single keystroke dial

Call Answering ● manual answer or automatic answer automatically connects the personal computer to the phone line

Personal Computer Requirements ● requires 5.25-inch diskette

Software Supported Menus/Operator Messages ● none supported

Diagnostics/Indicators ● none supported

Other Features/Options ● operating power derived from the personal computer

Cost/Service ● basic price $170 ● quantity discounts available ● 90-day warranty ● own service; factory service

□ Model A1

Application ● compatible with Bell 103 modems ● personal computer compatibility for Atari computers ● FCC Certified

Packaging ● standalone direct-connect modem ● communications software supplied on diskette or cassette

Operating Parameters ● half-/full-duplex asynchronous at rates to 300 bps ● originate/answer modes ● FSK modulation ● connects to Atari computers indirectly via Atari 850 interface module

Dialing ● manual dial via telephone ● supports alternate voice/data via talk/data switch plus regular telephone

Call Answering ● manual answer

Personal Computer Requirements ● requires single diskette drive, Atari 850 interface module

Software Supported Menus/Operator Messages ● communications/other parameters established via screen menus ● programmable operator messages

Diagnostics/Indicators ● front-panel LEDs for carrier, power

Other Features/Options ● none supported

Cost/Service ● basic price $199 ● quantity discounts available ● 90-day warranty ● own service; factory service

□ Model A1, Auto-Dial/-Answer

Application ● compatible with Bell 103 modems ● personal computer compatibility for Atari computers ● FCC Certified

Packaging ● standalone direct-connect modem ● communications software supplied on diskette or cassette

Operating Parameters ● half-/full-duplex asynchronous at rates to 300 bps ● originate/answer modes ● FSK modulation ● connects to Atari computers indirectly via ATARI 850 interface module

Dialing ● automatic dial with storage for 8 telephone numbers of 7 characters each ● pulse dial ● tone dial ● single keystroke dial ● supports alternate voice/data via talk/data switch plus regular telephone

Call Answering ● automatic answer automatically connects the personal computer to the phone line

Personal Computer Requirements ● requires diskette drive

Personal Computer Modems

Software Supported Menus/Operator Messages ● communications/ other parameters established via screen menus ● programmable operator messages

Diagnostics/Indicators ● front-panel LEDs for carrier, power

Other Features/Options ● none supported

Cost/Service ● basic price $239 ● quantity discounts available ● 90-day warranty ● own service; factory service

☐ Model AZ

Application ● compatible with Bell 103 modems ● personal computer compatibility for Atari computers ● FCC Certified

Packaging ● plug-in board ● communications software supplied on diskette or cassette

Operating Parameters ● half-/full-duplex asynchronous at rates to 300 bps ● originate/answer modes ● FSK modulation

Dialing ● manual dial via telephone ● supports alternate voice/data via talk/data switch plus regular telephone

Call Answering ● manual answer

Personal Computer Requirements ● requires single diskette drive

Software Supported Menus/Operator Messages ● programmable operator messages

Diagnostics/Indicators ● front-panel LEDs for carrier, power

Other Features/Options ● operating power derived from the personal computer, supports digital interface for serial printer

Cost/Service ● basic price $249 ● quantity discounts ● 90-day warranty ● own service; factory service

☐ Model AZ Autodial

Application ● compatible with Bell 103 modems ● personal computer compatibility for Atari computers ● FCC Certified

Packaging ● plug-in board

Operating Parameters ● half-/full-duplex asynchronous at rates to 300 bps ● original/answer modes ● FSK modulation

Dialing ● automatic dial with storage for 8 telephone numbers of 7 characters each ● pulse dial ● tone dial ● single keystroke dial ● supports alternate voice/data via talk/data switch plus regular telephone

Call Answering ● automatic answer automatically connects the personal computer to the phone line

Personal Computer Requirements ● requires single diskette drive

Software Supported Menus/Operator Messages ● programmable operator messages

Diagnostics/Indicators ● front-panel LEDs for carrier, power

Other Features/Options ● supports second digital interface for serial printer

Cost/Service ● basic price $279 ● quantity discounts available ● 90-day warranty ● own service; factory service

☐ Model R1

Application ● compatible with Bell 103 modems ● FCC Certified

Packaging ● standalone direct-connect modem ● communication software supplied for TRS 80 Model 1, 3 on diskette or cassette

Operating Parameters ● half-/full-duplex asynchronous at 300 bps ● originate/answer modes ● FSK modulation ● RS-232C DTE interface

Dialing ● manual dial via telephone

Call Answering ● manual answer

Personal Computer Requirements ● requires single diskette or cassette drive

Software Supported Menus/Operator Messages ● programmable operator messages

Diagnostics/Indicators ● front-panel LEDs for carrier, power

Other Features/Options ● none supported

Cost/Service ● basic price $159 ● quantity discounts available ● 90-day warranty ● own service; factory service

☐ Model T1 Autodial

Application ● compatible with Bell 103 modems ● personal computer compatibility TRS 80 Model 1

Packaging ● standalone direct-connect modem ● communications software supplied on diskette or cassette

Operating Parameters ● half-/full-duplex asynchronous at rates to 300 bps ● TRS 80 expansion interface

Dialing ● automatic dial with storage for 8 telephone numbers of 7 characters each ● pulse dial ● tone dial ● single keystroke dial

Call Answering ● manual answer

Personal Computer Requirements ● single diskette or cassette drive

Software Supported Menus/Operator Messages ● programmable operator messages

Diagnostics/Indicators ● front-panel LEDs for carrier, power

Other Features/Options ● none supported

Cost/Service ● basic price $259 ● quantity discounts available ● 90-day warranty ● own service; factory service

☐ Model T1

Application ● compatible with Bell 103 modems ● personal computer compatibility TRS 80 Model 1

Packaging ● standalone direct-connect modem ● diskette or cassette

Operating Parameters ● half-/full-duplex asynchronous at 300 bps ● originate/answer modes ● FSK modulation ● TRS 80 expansion interface

Dialing ● manual dial via telephone

Call Answering ● manual answer

Personal Computer Requirements ● requires single diskette or cassette drive

Software Supported Menus/Operator Messages ● programmable operator messages

Diagnostics/Indicators ● front-panel LEDs for carrier, power

Other Features/Options ● none supported

Cost/Service ● basic price $209, option pricing, printer port, $29.95 ● 90-day warranty ● own service; factory service

☐ Model R1 Autodial

Application ● compatible with Bell 103 modems ● FCC Certified

Packaging ● standalone direct-connect modem ● communications software supplied for TRS 80 Models 1 and 3 on diskette

Operating Parameters ● half-/full-duplex asynchronous at rates to 300 bps ● originate/answer modes ● FSK modulation ● RS-232C DTE interface

Dialing ● automatic dial with storage for 8 telephone numbers of 7 characters each ● pulse dial ● tone dial ● single keystroke dial

Call Answering ● manual answer

Personal Computer Requirements ● requires single diskette drive

Software Supported Menus/Operator Messages ● programmable operator messages

Diagnostics/Indicators ● front-panel LEDs for carrier, power

Other Features/Options ● none supported

Cost/Service ● basic price $199 ● quantity discounts available ● 90-day warranty ● own service; factory service

Personal Computer Modems

☐ Model TC1

Application • compatible with Bell 103 modems • personal computer compatibility for the TRS 80 color computer

Packaging • standalone direct-connect modem

Operating Parameters • half-/full-duplex asynchronous at 300 bps • originate/answer modes • TRS 80 expansion port DTE interface

Dialing • manual dial via telephone

Call Answering • manual answer

Personal Computer Requirements • none supported

Software Supported Menus/Operator Messages • programmable operator messages

Diagnostics/Indicators • front-panel LEDs for carrier, power

Other Features/Options • none supported

Cost/Service • basic price $199.50 • quantity discounts available • 90-day warranty • own service; factory service

☐ Model O1

Application • compatible with Bell 103 modems • personal computer compatibility for Osborne 1 • FCC Certified

Packaging • standalone direct-connect modem • communications software supplied on diskette

Operating Parameters • half-/full-duplex asynchronous at 300 bps • originate/answer modes • FSK modulation • user port DTE interface

Dialing • manual dial via telephone

Call Answering • manual answer

Personal Computer Requirements • requires single diskette drive

Software Supported Menus/Operator Messages • programmable operator messages

Diagnostics/Indicators • front-panel LEDs for carrier, power

Other Features/Options • none supported

Cost/Service • basic price $159 • quantity discounts available • 90-day warranty • own service; factory service

■ MULTI-TECH SYSTEMS, INC

82 Second Avenue SE, New Brighton, MN 55112 • 612-631-3550

☐ Modem II Data Modem

Application • compatible with Bell 103 modems • personal computer compatibility for Apple II, Apple II Plus, Apple IIe, Bell and Howell, and Franklin computers • FCC Certified

Packaging • plug-in board • communications software supplied on diskette and ROM

Operating Parameters • half-/full-duplex asynchronous at 110 or 300 bps • originate or answer modes • FSK modulation

Dialing • manual dial via telephone; terminal keyboard dial; automatic dial with storage for 20 telephone numbers of 31 characters each • pulse dial • tandem dial • single keystroke dial • multiple re-dial up to an infinite number of times, supports a linked list of 8 telephone numbers • supports alternate voice/data via keyboard command

Call Answering • manual answer or automatic answer automatically connects the personal computer to the phone line

Personal Computer Requirements • requires 5.25-inch diskette drive

Software Supported Menus/Operator Messages • communications/ other parameters established via screen menus for half-/full-duplex, firmware mode, remote console, advanced terminal, program control (for CP/M), parity, stop/start bits • operator messages including no answer, busy, online, help file, list commands, and dial tone

Diagnostics/Indicators • analog loopback • front-panel LEDs for off hook, carrier

Other Features/Options • file transfers • programmable automatic database log-on for online databases • concurrent data display/ printer transfer; data display/disk transfer • operating power derived from the personal computer • built-in speaker allows audible monitoring of call progress, handset jack • Hayes compatible

Cost/Service • basic price $399 • quantity discounts available • 2-year warranty • own service; factory service

☐ MT212C

Application • compatible with Bell 212A • FCC Certified

Packaging • standalone direct-connect modem

Operating Parameters • full-duplex asynchronous at 1200 bps • PSK modulation • RS-232C DTE interface

Dialing • manual dial via telephone; terminal keyboard dial with storage for 1 telephone number • pulse dial • tone dial • tandem dial • single keystroke dial • automatic re-dial of last number dialed • supports alternate voice/data via talk/data switch plus regular telephone

Call Answering • manual answer or automatic answer automatically connects the personal computer to the phone line

Personal Computer Requirements • none supported

Software Supported Menus/Operator Messages • operator messages including list commands

Diagnostics/Indicators • analog loopback, front-panel LEDs for key EIA interface signals

Other Features/Options • none supported

Cost/Service • basic price $550 • quantity discounts available • 2-year warranty • own service; factory service

☐ MT212PC

Application • compatible with Bell 212A • personal computer compatibility for the IBM PC • FCC Certified

Packaging • plug-in board • communications software supplied on diskette

Operating Parameters • half-/full-duplex asynchronous at 300/ 1200 bps • FSK, PSK modulation

Dialing • manual dial via telephone; terminal keyboard dial; automatic dial with storage for 20 telephone numbers of 31 characters each • pulse dial • tone dial • tandem dial • single keystroke dial • multiple re-dial up to an infinite number of times; supports a linked list of 8 telephone numbers • supports alternate voice/data via keyboard command

Call Answering • manual answer or automatic answer automatically connects the personal computer to the phone line

Personal Computer Requirements • requires 64K-byte main memory • CP/M operating system • 5.25-inch diskette

Software Supported Menus/Operator Messages • operator messages including no answer

Diagnostics/Indicators • analog loopback

Other Features/Options • file transfers • automatic database log-on for online databases • data display/printer transfer; data display/disk transfer, operating power derived from the personal computer • supports second digital interface for local printer, second modem; built-in speaker; handset jack

Cost/Service • basic price $549 • quantity discounts available • 2-year warranty • own service; factory service

☐ MT212AH

Application • compatible with Bell 212A modems • FCC Certified

Packaging • standalone direct-connect modem

Operating Parameters • half-/full-duplex asynchronous at 300/ 1200 bps • originate/answer modes • FSK, PSK modulation • RS-232C DTE interface

Personal Computer Modems

Dialing ● manual dial via telephone; terminal keyboard dial; automatic dial with storage for 4 telephone numbers of 31 characters each ● pulse dial ● tone dial ● tandem dial ● multiple re-dial up to an infinite number of times; supports a linked list of 8 telephone numbers ● supports alternate voice/data via keyboard command

Call Answering ● manual answer or automatic answer automatically connects the personal computer to the phone line

Personal Computer Requirements ● none supported

Software Supported Menus/Operator Messages ● operator messages including no answer, busy, online, dial tone, error

Diagnostics/Indicators ● analog loopback ● front-panel LEDs for 7 EIA interface signals

Other Features/Options ● Hayes Smartmodem 1200 compatible

Cost/Service ● basic price $539 ● quantity discounts available ● 2-year warranty ● own service; factory service

☐ MT103H

Application ● compatible with Bell 103 modems ● FCC Certified

Packaging ● standalone direct-connect modem

Operating Parameters ● full-duplex asynchronous at rates to 300 bps ● FSK modulation ● RS-232C DTE interface

Dialing ● manual dial via telephone; terminal keyboard dial; automatic dial with storage for 4 telephone numbers of 31 characters each ● pulse dial ● tone dial ● tandem dial ● multiple re-dial up to an infinite number of times; supports a linked list of 8 telephone numbers ● supports alternate voice/data via keyboard command

Call Answering ● manual answer or automatic answer automatically connects the personal computer to the phone line

Personal Computer Requirements ● none supported

Software Supported Menus/Operator Messages ● operator messages including no answer, busy, online, dial tone

Diagnostics/Indicators ● analog loopback ● front-panel LEDs for 6 EIA interface signals

Other Features/Options ● Hayes Smartmodem compatible

Cost/Service ● basic price $289 ● quantity discounts available ● 2-year warranty ● own service; factory service

■ NOVATION

18665 Oxnard Street, Tarzana, CA 91356 ● 213-996-5060

☐ CAT The Acoustic Modem

Application ● compatible with Bell 103 modems

Packaging ● acoustic coupler

Operating Parameters ● half-/full-duplex asynchronous at rates to 300 bps ● answer/originate modes ● RS-232C DTE interface

Dialing ● manual dial via telephone

Call Answering ● manual answer

Personal Computer Requirements ● none supported

Software Supported Menus/Operator Messages ● none supported

Diagnostics/Indicators ● self-test of modem circuitry ● front-panel LEDs for carrier, power

Other Features/Options ● none supported

Cost/Service ● basic price $189 ● quantity discounts over 100 ● 1-year warranty ● own service; factory service

☐ The D-CAT Modem

Application ● compatible with Bell 103 modems ● FCC Certified

Packaging ● standalone direct-connect modem

Operating Parameters ● half-/full-duplex asynchronous at rates to 300 bps ● originate/answer modes ● FSK modulation ● RS-232C DTE interface

Dialing ● manual dial via telephone ● supports alternate voice/data via talk/data switch plus regular telephone

Call Answering ● manual answer

Personal Computer Requirements ● none supported

Software Supported Menus/Operator Messages ● none supported

Diagnostics/Indicators ● self-test of modem circuitry ● front-panel LEDs for ready, power

Other Features/Options ● none supported

Cost/Service ● basic price $199 ● quantity discounts available ● 1-year warranty ● own service; factory service

☐ The AUTO-CAT Modem

Application ● compatible with Bell 212A modems ● FCC Certified

Packaging ● standalone direct-connect modem

Operating Parameters ● half-/full-duplex asynchronous at 300/1200 bps ● FSK modulation ● RS-232C DTE interface

Dialing ● manual dial via telephone

Call Answering ● manual answer or automatic answer automatically connects the personal computer to the phone line

Personal Computer Requirements ● none supported

Software Supported Menus/Operator Messages ● none supported

Diagnostics/Indicators ● self-test of modem circuitry ● analog loopback; digital loopback ● front-panel LEDs

Other Features/Options ● none supported

Cost/Service ● basic price $695 ● quantity discounts available ● 1-year warranty ● own service; factory service

☐ Apple-CAT II

Application ● compatible with Bell 103 modems ● personal computer compatibility Apple II, II Plus, IIe ● FCC Certified

Packaging ● plug-in board ● communications software supplied on diskette

Operating Parameters ● half-/full-duplex asynchronous at rates to 300 bps ● FSK modulation

Dialing ● manual dial via telephone; terminal keyboard dial; automatic dial with storage for 26 telephone numbers ● pulse dial ● tone dial ● tandem dial ● single keystroke dial ● automatic re-dial of last number dialed ● supports alternate voice/data via keyboard command

Call Answering ● manual answer ● automatic answer automatically connects the personal computer to the phone line

Personal Computer Requirements ● requires single diskette drive

Software Supported Menus/Operator Messages ● communications/other parameters established via screen menus for parity, speed, stop/start bits, character length

Diagnostics/Indicators ● self-test of modem circuitry ● analog loopback

Other Features/Options ● operating power derived from the personal computer ● supports second digital interface for local printer, optional handset, $29; RS-232C port, $39; BSR X-10 controller (for electrical appliance), $19; cassette recorder, $5; touchtone receiver chip, $99; firmware chip, $29; deaf diskette, $29

Cost/Service ● price ranges from $389 to $488 depending on options ● quantity discounts available ● 1-year warranty ● own service; factory service

☐ 103 Smart Cat

Application ● compatible with Bell 103-compatible modems ● FCC Certified

Packaging ● standalone direct-connect modem

Operating Parameters ● full-duplex asynchronous at 300 bps ● FSK modulation ● RS-232C DTE interface

Personal Computer Modems

Dialing • manual dial via telephone; terminal keyboard dial • pulse dial • tone dial • tandem dial

Call Answering • manual answer or automatic answer automatically connects the personal computer to the phone line

Personal Computer Requirements • none supported

Software Supported Menus/Operator Messages • communications/ other parameters established via screen menus for parity, speed, stop/start bits, character length • operator messages including no answer, busy, no dial, ready, ringing, connection loss, ring-in

Diagnostics/Indicators • analog loopback; remote and local digital loopback • front-panel LED for power, ready

Other Features/Options • none supported

Cost/Service • basic price $249 • quantity discounts available • 1-year warranty • own service; factory service

☐ 103/212 Smart Cat

Application • compatible with Bell 212A modems • FCC Certified

Packaging • standalone direct-connect modem

Operating Parameters • full-duplex asynchronous at 300/1200 bps • FSK modulation • RS-232C DTE interface

Dialing • manual dial via telephone; terminal keyboard dial • pulse dial • tone dial • tandem dial

Call Answering • manual answer or automatic answer automatically connects the personal computer to the phone line

Personal Computer Requirements • none supported

Software Supported Menus/Operator Messages • communications/ other parameters established via screen menus for parity, speed, stop/start bits, character length • operator messages including no answer, busy, no dial, ready, ringing, connection loss, ring-in

Diagnostics/Indicators • analog loopback; remote and local digital loopback • front-panel LEDs for power, ready

Other Features/Options • none supported

Cost/Service • basic price $595 • quantity discounts 100+ • 1-year warranty • own service; factory service

☐ J-Cat

Application • compatible with Bell 103 modems • FCC Certified

Packaging • standalone direct-connect modem

Operating Parameters • half-/full-duplex asynchronous at rates to 300 bps • FSK modulation • RS-232C DTE interface

Dialing • manual dial via telephone; terminal keyboard dial • pulse dial • tone dial

Call Answering • manual answer or automatic answer automatically connects the personal computer to the phone line

Personal Computer Requirements • none supported

Software Supported Menus/Operator Messages • none supported

Diagnostics/Indicators • analog loopback • front-panel LEDs for off hook, ready

Other Features/Options • none supported

Cost/Service • basic price $149 • quantity discounts 100+ • 1-year warranty • own service; factory service

■ OMNITEC DATA

2405 South 20th Street, Phoenix, AZ 85034 • 602-258-8244

☐ Model 9113B Originate/Answer/Auto-Answer

Application • compatible with Bell 103 modems

Packaging • standalone direct-connect modem

Operating Parameters • half-/full-duplex asynchronous at rates to 300 bps • originate/answer modes • FSK modulation • RS-232C or current-loop DTE interface

Dialing • manual dial via telephone

Call Answering • manual answer or automatic answer automatically connects the personal computer to the phone line

Personal Computer Requirements • none supported

Software Supported Menus/Operator Messages • none supported

Diagnostics/Indicators • front-panel LEDs for 9 key EIA interface signals

Other Features/Options • none supported

Cost/Service • basic price $380 • quantity discounts available • 1-year warranty • own service; factory service

☐ Model 9113 BOD

Application • compatible with Bell 103 modems • FCC Certified

Packaging • standalone direct-connect modem

Operating Parameters • half-/full-duplex asynchronous at rates to 300 bps • originate/answer modes • FSK modulation • RS-232C or current-loop DTE interface

Dialing • manual dial via telephone

Call Answering • manual answer or automatic answer automatically connects the personal computer to the phone line

Personal Computer Requirements • none supported

Software Supported Menus/Operator Messages • none supported

Diagnostics/Indicators • front-panel LEDs for 9 key EIA interface signals

Other Features/Options • none supported

Cost/Service • basic price $585 • quantity discounts: 6, 25, 50, 100 • 1-year warranty • own service; factory service

☐ Model 8212 Auto-Dial

Application • compatible with Bell 212A modems • FCC Certified

Packaging • standalone direct-connect modem

Operating Parameters • full-duplex asynchronous at 300/1200 bps; synchronous at 1200 bps • originate/answer modes • FSK, PSK modulation • RS-232C DTE interface

Dialing • manual dial via telephone; terminal keyboard dial; automatic dial with storage for 10 telephone numbers of 30 characters each • pulse dial • tone dial • tandem dial • single keystroke dial • multiple re-dial up to 25 times; supports a linked list of telephone numbers

Call Answering • automatic answer automatically connects the personal computer to the phone line

Personal Computer Requirements • none supported

Software Supported Menus/Operator Messages • communications/other parameters established via screen menus for parity, hang-up code, dial modes, speed • operator messages including busy, online, help file, list commands, dead line

Diagnostics/Indicators • self-test of modem circuitry • analog loopback; remote and local digital loopback • front-panel LEDs for key EIA interface signals

Other Features/Options • power backup—lithium 1-year storage battery • rackmount available

Cost/Service • basic price $650 • quantity discounts: 6-$625, 25-$590, 50-$540, 100-$490 • 1-year warranty • own service; factory service

☐ 2X212

Application • compatible with Bell 212A modems • FCC Certified

Packaging • standalone direct-connect modem

Operating Parameters • full-duplex asynchronous at 300/1200 bps; synchronous at 1200 bps • originate/answer modes • FSK, PSK modulation • RS-232C DTE interface

Dialing • manual dial via telephone; terminal keyboard dial; automatic dial with storage for 10 telephone numbers of 30 characters each • pulse dial • tone dial • tandem dial • single keystroke dial •

Personal Computer Modems

multiple re-dial up to 25 times; supports a linked list of telephone numbers

Call Answering ● automatic answer automatically connects the personal computer to the phone line

Personal Computer Requirements ● none supported

Software Supported Menus/Operator Messages ● communications/other parameters established via screen menus for parity, hang-up code, dial modes, speed ● operator messages including busy, online, list commands, dead line

Diagnostics/Indicators ● self-test of modem circuitry ● analog loopback; remote and local digital loopback ● front-panel LEDs for key EIA interface signals

Other Features/Options ● supports different terminal/modem data rates in a range of 110 to 1200 bps ● supports 2 terminals on 1 telephone line using integral multiplexer; 4K buffering; auto-retransmission; flow control (clear to send); power backup—lithium 1-year storage battery

Cost/Service ● basic price $995 ● quantity discounts available ● 1-year warranty ● own service; factory service

☐ Model 9212A Originate/Auto-Answer

Application ● compatible with Bell 212A modems ● FCC Certified

Packaging ● standalone direct-connect modem

Operating Parameters ● full-duplex asynchronous at 300/1200 bps; synchronous at 1200 bps ● originate/answer modes ● FSK, PSK modulation ● RS-232C DTE interface

Dialing ● manual dial via built-in keypad ● automatic re-dial of last number dialed

Call Answering ● automatic answer automatically connects the personal computer to the phone line

Personal Computer Requirements ● none supported

Software Supported Menus/Operator Messages ● none supported

Diagnostics/Indicators ● self-test of modem circuitry ● analog loopback; remote and local digital loopback ● 8 front-panel LEDs for key EIA interface signals, high-speed mode, modem check, test mode

Other Features/Options ● audio line monitor with volume control

Cost/Service ● basic price $785 ● quantity discounts: 6-$740; 25-$710; 50-$680; 100-$630 ● 1-year warranty ● own service; factory service

☐ Model 7212

Application ● compatible with Bell 212A modems ● FCC Certified

Packaging ● standalone direct-connect modem

Operating Parameters ● full-duplex asynchronous at 300/1200 bps; synchronous at 1200 bps ● FSK, PSK modulation ● RS-232C DTE interface

Dialing ● Manual dial via telephone ● supports alternate voice/data via exclusion-key telephone

Call Answering ● undisclosed

Personal Computer Requirements ● none supported

Software Supported Menus/Operator Messages ● none supported

Diagnostics/Indicators ● undisclosed

Other Features/Options ● none supported

Cost/Service ● basic price $575 ● quantity discounts available ● 1-year warranty ● own service; factory service

■ PENRIL/Data Communications Division

3204 Monroe Street, Rockville, MD 20852-4297 ● 301-984-8225

☐ Model 300/1200

Application ● compatible with Bell 212A modems ● FCC Certified

Packaging ● standalone direct-connect modem

Operating Parameters ● full-duplex asynchronous at 300/1200 bps; synchronous at 1200 bps ● originate/answer modes ● FSK, PSK modulation ● RS-232C DTE interface

Dialing ● Manual dial via telephone ● supports alternate voice/data via talk/data switch plus regular telephone or exclusion-key telephone

Call Answering ● manual answer or automatic answer automatically connects the personal computer to the phone line

Personal Computer Requirements ● none supported

Software Supported Menus/Operator Messages ● none supported

Diagnostics/Indicators ● self-test of modem circuitry ● analog loopback; local and remote digital loopback ● front-panel LEDs for make busy, high speed (for 1200 bps), modem check, test mode, and 4 key EIA interface signals

Other Features/Options ● electronic mail

Cost/Service ● basic price $795 ● quantity discounts, 1 to 4 ● 1.5-year warranty ● own service; factory service

☐ Model AD 300/1200

Application ● compatible with Bell 212A modems ● FCC Certified

Packaging ● standalone direct-connect modem ● communications software supplied on RAM

Operating Parameters ● full-duplex asynchronous at 300 or 1200 bps ● originate/answer modes ● FSK, PSK modulation ● RS-232C DTE interface

Dialing ● manual dial via telephone; terminal keyboard dial; automatic dial with storage for 10 telephone numbers of 20 characters each ● pulse dial ● tone dial ● tandem dial (blind dialing) ● single keystroke dial ● multiple re-dial up to 15 times; supports an infinite linked list of telephone numbers ● supports alternate voice/data plus regular telephone

Call Answering ● manual answer or automatic answer automatically connects the personal computer to the phone line

Personal Computer Requirements ● none supported

Software Supported Menus/Operator Messages ● communications/other parameters established via screen menus for data rate, parity, command functions, full- or half-duplex, disconnect ● operator messages including no answer, busy, online, help file

Diagnostics/Indicators ● self-test of modem circuitry ● analog loopback; local and remote digital loopback ● front-panel LEDs for make busy, high speed (for 1200 bps), modem check, test mode, and 4 key EIA interface signals

Other Features/Options ● programmable automatic database log-on for online databases ● electronic mail ● rackmount available

Cost/Service ● basic price $895 ● quantity discounts available ● 1.5-year warranty ● own service; factory service

■ PRENTICE CORPORATION

266 Caspian Drive, Sunnyvale, CA 94088-3544 ● 408-734-9810

☐ 212TCM

Application ● compatible with Bell 212A modems ● FCC Certified

Packaging ● standalone direct-connect modem

Operating Parameters ● half-/full-duplex asynchronous at 300/1200 bps ● FSK, DPSK modulation ● RS-232C DTE interface

Dialing ● terminal keyboard dial; automatic dial with storage for 16 telephone numbers of 54 characters each ● pulse dial ● tone dial ● tandem dial ● single keystroke dial ● multiple re-dial up to 15 times; supports a linked list of 16 telephone numbers ● supports alternate voice/data keyboard command

Call Answering ● manual answer or automatic answer automatically connects the personal computer to the phone line

Personal Computer Requirements ● none supported

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Software Supported Menus/Operator Messages ● communications/other parameters established via screen menus including speaker volume, number of rings, answer mode ● operator messages including no answer, busy, online, help file; displays dialing sequence

Diagnostics/Indicators ● analog loopback; digital loopback ● front-panel LEDs for carrier detect, transmit/receive

Other Features/Options ● none supported

Cost/Service ● basic price $795 ● quantity discounts available ● 1-year warranty ● own service; factory service; fast-dispatch replacement service

■ RACAL-VADIC INC
222 Caspian Drive, Sunnyvale, CA 94086 ● 408-744-0810

☐ VA103 Modemphone

Application ● compatible with Bell 103 modems ● FCC Certified

Packaging ● standalone direct-connect modem packaged inside a rotary- or tone-dial telephone

Operating Parameters ● full-duplex asynchronous at rates up to 300 bps ● originate/answer modes ● FSK modulation ● RS-232C DTE interface

Dialing ● manual dial via (integral) telephone ● supports alternate voice/data via talk/data switch

Call Answering ● manual answer or optional automatic answer automatically connects the personal computer to the phone line

Personal Computer Requirements ● none supported

Software Supported Menus/Operator Messages ● none supported

Diagnostics/Indicators ● front-panel LED for carrier on/off

Other Features/Options ● optional automatic answer mode; optional tone-dial telephone

Cost/Service ● basic price $250; option pricing $330 with auto-answer; $300 with tone dial; $380 with tone dial and auto-answer ● quantity discounts available for 10 or more purchased units ● 1-year warranty ● own service; factory service; field service provided by some distributors

☐ VA355

Application ● compatible with Bell 103 modems ● FCC Certified

Packaging ● standalone direct-connect modem

Operating Parameters ● full-duplex asynchronous at rates up to 300 bps ● originate/answer modes ● FSK modulation ● RS-232C DTE interface

Dialing ● manual dial via telephone ● supports alternate voice/data via talk/data switch plus regular telephone

Call Answering ● manual answer or (factory-set) automatic answer automatically connects the personal computer to the phone line

Personal Computer Requirements ● none supported

Software Supported Menus/Operator Messages ● none supported

Diagnostics/Indicators ● self-test of modem circuitry ● analog loopback; digital loopback ● front-panel LEDs for 8 key EIA interface signals

Other Features/Options ● includes force-answer switch ● rack-mount versions available

Cost/Service ● basic price $375 ● quantity discounts available for 10 or more purchased units ● 1-year warranty ● own service ● factory service; field service provided by some distributors

☐ VA212

Application ● compatible with Bell 212A modems ● FCC Certified

Packaging ● standalone direct-connect modem

Operating Parameters ● full-duplex asynchronous at 300/1200 bps; synchronous at 1200 bps ● originate/answer modes ● FSK, PSK modulation ● RS-232C DTE interface

Dialing ● manual dial via telephone; terminal keyboard or modem front-panel dial; automatic dial with storage for 15 telephone numbers of 31 characters each ● pulse dial ● tone dial ● single keystroke dial ● supports a linked list of 15 telephone numbers ● re-dial key automatically re-dials last phone number called

Call Answering ● manual answer or automatic answer automatically connects the personal computer to the phone line

Personal Computer Requirements ● none supported

Software Supported Menus/Operator Messages ● 26 user-programmable options stored in modem memory and accessed from the terminal/personal computer keyboard

Diagnostics/Indicators ● self-test of modem circuitry local and remote, analog loopback, digital loopback, front-panel LCD's for EIA signal status; call progress; modem status; dialer prompts; telephone numbers; and options

Other Features/Options ● modem front-panel keyboard eliminates need for internal wiring ● automatically determines if calling modem is transmitting at 300 or 1200 bps ● accommodates 9- and 10-bit character codes automatically

Cost/Service ● basic price $695 ● quantity discounts available for 10 or more purchased units ● 1-year warranty ● own service ● factory service; field service provided by some distributors

☐ VA212LC

Application ● compatible with Bell 212A modems ● FCC Certified

Packaging ● standalone direct-connect modem

Operating Parameters ● full-duplex asynchronous at 300/1200 bps ● originate/answer modes ● FSK, PSK modulation ● RS-232C DTE interface

Dialing ● manual dial via telephone ● supports alternate voice/data via talk/data switch plus regular telephone

Call Answering ● manual answer or automatic answer automatically connects the personal computer to the phone line

Personal Computer Requirements ● none supported

Software Supported Menus/Operator Messages ● none supported

Diagnostics/Indicators ● self-test of modem circuitry ● responds to remote test ● front-panel LEDs for 3 key EIA interface signals; voice/data status; and high-speed mode

Other Features/Options ● automatically determines if calling modem is transmitting at 300 or 1200 bps ● automatic detection algorithm and internal buffer accommodates 9- and 10-bit character codes

Cost/Service ● basic price $495 ● quantity discounts available for 10 or more purchased units ● 1-year warranty ● own service; factory service; field service provided by some distributors

☐ VA3413 Acoustic Coupler

Application ● compatible with Bell 212A modems

Packaging ● acoustic coupler

Operating Parameters ● full-duplex asynchronous at 300/1200 bps; synchronous at 1200 bps ● originate-only mode ● FSK, QAM modulation ● RS-232C DTE interface

Dialing ● manual dial via telephone

Call Answering ● none supported

Personal Computer Requirements ● none supported

Software Supported Menus/Operator Messages ● none supported

Diagnostics/Indicators ● analog loopback ● front-panel LEDs for modem power and 3 key EIA interface signals

Other Features/Options ● automatically identifies calling modem and adjusts to proper mode

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Cost/Service ● basic price $795 ● quantity discounts available for 10 or more purchased units ● 1-year warranty ● own service; factory service; field service provided by some distributors

☐ VA3451 Triple Modem

Application ● compatible with Bell 212A and VA3400 modems ● FCC Certified

Packaging ● standalone direct-connect modem

Operating Parameters ● full-duplex asynchronous at 300/1200 bps; synchronous at 1200 bps ● originate/answer modes ● FSK, QAM modulation ● RS-232C DTE interface

Dialing ● manual dial via telephone; optional automatic dial with storage for 60 characters ● pulse dial ● tandem dial ● supports alternate voice/data via talk/data switch plus regular telephone

Call Answering ● manual answer

Personal Computer Requirements ● none supported

Software Supported Menus/Operator Messages ● dialing parameters established via screen menus

Diagnostics/Indicators ● self-test of modem circuitry ● local and remote analog loopback; digital loopback ● front-panel LEDs for 7 key EIA interface signals and high-speed mode

Other Features/Options ● automatically identifies calling modem and adjusts to proper mode ● rackmount versions

Cost/Service ● basic price $875; option pricing $75 for auto-dial ● quantity discounts available for 10 or more purchased units ● 1-year warranty ● own service; factory service; field service provided by some distributors

☐ VA4401 Quad Modem

Application ● compatible with Bell 212A and VA3400 modems; VA440 (CCITT V.22) compatible at 2400 bps ● FCC Certified

Packaging ● standalone direct-connect modem

Operating Parameters ● full-duplex asynchronous at 300 bps; asynchronous or synchronous at 1200/2400 bps ● originate/answer modes ● FSK, QAM modulation ● RS-232C DTE interface

Dialing ● manual dial via telephone

Call Answering ● manual answer or automatic answer automatically connects the personal computer to the phone line

Personal Computer Requirements ● none supported

Software Supported Menus/Operator Messages ● none supported

Diagnostics/Indicators ● self-test of modem circuitry ● local and remote analog loopback; digital loopback, front-panel LEDs for 8 key EIA interface signals, and modem status

Other Features/Options ● automatically identifies calling modem and adjusts to proper mode ● rackmount or standalone versions available

Cost/Service ● basic price $1,945 ● quantity discounts for 10 or more purchased units ● 1-year warranty ● own service; factory service; field service provided by some distributors

☐ VA4403

Application ● VA4400 (CCITT V.22) compatible at 2400 bps ● FCC Certified

Packaging ● standalone direct-connect modem

Operating Parameters ● full-duplex asynchronous or synchronous at 2400 bps ● originate/answer modes ● QAM modulation ● RS-232C DTE interface

Dialing ● manual dial via telephone

Call Answering ● manual answer

Personal Computer Requirements ● none supported

Software Supported Menus/Operator Messages ● none supported

Diagnostics/Indicators ● self-test of modem circuitry ● local and remote analog loopback; digital loopback ● front-panel LEDs for 8 key EIA interface signals, and modem status

Other Features/Options ● rackmount or standalone versions available

Cost/Service ● basic price $1,745 ● quantity discounts for 10 or more purchased units ● 1-year warranty ● own service; factory service; field service provided by some distributors

■ RIXON INCORPORATED/Subsidiary of Sangamo Weston/Subsidiary of Schumberger Limited

2120 Industrial Parkway, Silver Springs, MD 20904 ● 301-622-2121

☐ Model R103J

Application ● compatible with Bell 103 modems ● FCC Certified

Packaging ● standalone direct-connect modem

Operating Parameters ● full-duplex asynchronous at rates to 300 bps ● FSK modulation ● RS-232C DTE interface

Dialing ● manual dial via telephone ● talk/data switch plus regular telephone

Call Answering ● manual answer or automatic answer automatically connects the personal computer to the phone line

Personal Computer Requirements ● none supported

Software Supported Menus/Operator Messages ● none supported

Diagnostics/Indicators ● self-test of modem circuitry ● front-panel LEDs for 4 key EIA interface signals

Other Features/Options ● built-in abort timer for non-data calls ● rackmount available

Cost/Service ● basic price $249 ● quantity discounts ● 1-year warranty ● own service; field service, factory service ● field service locations in 11 major U.S. cities and Ottawa, Canada

☐ Model R212A Intelligent Modem

Application ● compatible with Bell 212A modems ● FCC Certified

Packaging ● standalone direct-connect modem

Operating Parameters ● full-duplex asynchronous at 300/1200 bps; synchronous at 1200 bps ● FSK, PSK modulation ● RS-232C DTE interface

Dialing ● manual dial via telephone; terminal keyboard dial; automatic dial with storage for 10 telephone numbers of 60 characters each ● pulse dial ● tone dial ● tandem dial ● single keystroke dial ● multiple re-dial up to 10 times; supports a linked list of telephone numbers ● blind dialing for use with nonstandard dial tones

Call Answering ● manual answer or automatic answer automatically connects the personal computer to the phone line

Personal Computer Requirements ● none supported

Software Supported Menus/Operator Messages ● modem communications/other parameters established via screen menus ● operator messages including online, help file, busy out

Diagnostics/Indicators ● self-test of modem circuitry ● analog loopback; digital loopback ● modem operating conditions indicated on terminal screen

Other Features/Options ● rackmount version available

Cost/Service ● basic price $499 ● quantity discounts available ● 2-year warranty ● own service; field service; factory service ● field service locations in 11 major U.S. cities and Ottawa, Canada

☐ PC212A Intelligent Modem

Application ● compatible with Bell 212A modems ● personal computer compatibility with IBM PC and XT

Packaging ● plug-in board ● communications software supplied on diskette

Operating Parameters ● full-duplex asynchronous at 300/1200

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bps; synchronous at 1200 bps ● PSK, DPSK modulation ● PC bus interface

Dialing ● manual dial via telephone; terminal keyboard dial; automatic dial with storage for 10 telephone numbers of 60 characters each ● pulse dial ● tone dial ● tandem dial ● single keystroke dial ● multiple re-dial up to 10 times; supports a linked list of telephone numbers ● supports alternate voice/data via keyboard entry plus regular telephone ● other dialing features: blind dialing for use with nonstandard dial tones

Call Answering ● manual answer or automatic answer automatically connects the personal computer to the phone line

Personal Computer Requirements ● requires 64K-byte main memory ● single diskette drive ● 80-column CRT display

Software Supported Menus/Operator Messages ● communications/other parameters established via screen menus for both modem and PC ● operator messages including online, help file, busy out; provides either standard Rixon or Hayes Smartmodem menu formats

Diagnostics/Indicators ● self-test of modem circuitry ● analog loopback; digital loopback ● modem operating conditions visible on terminal screen

Other Features/Options ● operating power derived from the personal computer, supports digital interface for local printer, or alternate communication line

Cost/Service ● basic price $499, option pricing $539 with digital interface ● quantity discounts available ● 2-year warranty ● own service; field service; factory service ● field service locations in 11 major U.S. cities and Ottawa, Canada

☐ Model R2424

Application ● compatible with Bell 212A in fallback mode; R2424 compatible only at 2400 bps ● FCC Certified

Packaging ● standalone direct-connect modem

Operating Parameters ● full-duplex asynchronous or synchronous at 1200/2400 bps ● originate/answer modes ● PSK and QAM modulation ● RS-232C DTE interface

Dialing ● manual dial via telephone ● supports alternate voice/-data via talk/data switch plus regular telephone

Call Answering ● manual answer or automatic answer automatically connects the personal computer to the phone line

Personal Computer Requirements ● none supported

Software Supported Menus/Operator Messages ● none supported

Diagnostics/Indicators ● self-test of modem circuitry ● analog loopback; digital loopback ● front-panel LEDs for 7 key EIA interface signals; error condition; test mode; high-speed mode; telephone ring detect

Other Features/Options ● rackmount available ● switch-selection between dial-up and private line circuits

Cost/Service ● basic price $1,595 ● quantity discounts available ● 1-year warranty ● own service; field service; factory service ● field service locations in 11 major U.S. cities and Ottawa, Canada

■ SSM MICROCOMPUTER PRODUCTS, INC

2190 Paragon Drive, San Jose, CA 95131 ● 408-946-7400

☐ SSM Modemcard

Application ● compatible with Bell 103 modems ● personal computer compatibility for Apple II, II+, IIe ● FCC Certified

Packaging ● plug-in board ● optional communications software supplied on diskette

Operating Parameters ● half-/full-duplex asynchronous at rates to 300 bps ● originate/answer modes ● FSK modulation

Dialing ● terminal keyboard dial ● pulse dial ● tone dial

Call Answering ● automatic answer automatically connects the personal computer to the phone line

Personal Computer Requirements ● requires optional software ● 5.25-inch diskette

Software Supported Menus/Operator Messages ● communications/other parameters established via screen menus ● operator messages including online, dialing, carrier detect, hung up

Diagnostics/Indicators ● none supported

Other Features/Options ● operating power derived from the personal computer, compatible with Hayes Micromodem II; includes audio monitor

Cost/Service ● basic price $325, option pricing with software $388 ● quantity discounts available ● 2-year warranty ● own service; factory service

☐ Transmodem 1200

Application ● compatible with Bell 212A modems ● optional personal computer compatibility for IBM PC and Apple computers ● FCC Certified

Packaging ● standalone direct-connect modem ● optional communications software supplied on diskette

Operating Parameters ● full-duplex asynchronous at 300/1200 bps ● answer/originate modes ● FSK modulation ● RS-232C DTE interface

Dialing ● terminal keyboard dial; automatic dial with storage for 1 telephone number of 32 characters ● pulse dial ● tone dial ● tandem dial; blind dialing ● multiple re-dial up to 8 times

Call Answering ● automatic answer automatically connects the personal computer to the phone line

Personal Computer Requirements ● requires IBM PC with 128K bytes or Apple with 48K-byte main memory ● 5.25-inch diskette

Software Supported Menus/Operator Messages ● communications/other parameters established via screen menus for data format, speed, character length, parity, re-dial; 1—can set automatically ● operator messages including busy, online, list commands, ready, dialing, option number, ringing, no dial tone, voice, failed call, time out, number of retries=,answer tone

Diagnostics/Indicators ● front-panel LEDs for power, carrier detect, transmit/receive, speak

Other Features/Options ● file transfers ● programmable automatic database log-on for online databases ● text editing (line editor) ● electronic mail ● error control ● concurrent operations including data display/printer transfer; data display/disk transfer ● includes handset jack

Cost/Service ● basic price $695; option pricing $999 with software (including Apple interface) ● 2-year warranty ● own service; factory service

☐ PC Modem Card 300

Application ● compatible with Bell 103 modems ● personal computer compatibility for the IBM PC ● FCC Certified

Packaging ● plug-in board ● communications software supplied on diskette

Operating Parameters ● full-duplex asynchronous at rates to 300 bps; 1200 bps optional ● originate/answer modes ● FSK modulation

Dialing ● terminal keyboard dial ● pulse dial ● tone dial ● blind dialing ● multiple re-dial up to 8 times

Call Answering ● automatic answer automatically connects the personal computer to the phone line

Personal Computer Requirements ● requires IBM PC with 128K-byte main memory ● 5.25-inch diskette

Software Supported Menus/Operator Messages ● communications/other parameters established via screen menus for data format, speed, character length, parity, re-dial—all can be set via menu or automatically ● operator messages including busy, online, list commands, ready, dialing, option number, ringing, no dial tone, voice, failed call, time-out, number of retries=, answer tone

Diagnostics/Indicators ● none supported

Personal Computer Modems

Other Features/Options ● file transfers ● programmable automatic database log-on for online databases ● text editing ● electronic mail ● error control ● concurrent operations including data display/printer transfer; data display/disk transfer ● operating power derived from the personal computer ● includes handset jack

Cost/Service ● basic price $349, option pricing $269 for upgrade to 1200 bps ● price ranges from $349 to $618 depending on options ● 2-year warranty ● own service; factory service

☐ PC Modem Card 300/1200

Application ● compatible with Bell 212A modems ● personal computer compatibility for the IBM PC ● FCC Certified

Packaging ● plug-in board ● communications software supplied on diskette

Operating Parameters ● full-duplex asynchronous at 300/1200 bps ● originate/answer modes ● FSK modulation

Dialing ● terminal keyboard dial ● pulse dial ● tone dial ● blind dialing ● multiple re-dial up to 8 times

Call Answering ● automatic answer automatically connects the personal computer to the phone line

Personal Computer Requirements ● requires IBM PC with 128K-byte main memory ● 5.25-inch diskette

Software Supported Menus/Operator Messages ● communications/other parameters established via screen menus for data format, speed, character length, parity, re-dial—all can be set via menu or automatically ● operator messages including busy, online, list commands, ready, dialing, option number, ringing, no dial tone, voice, failed call, time-out, number of retries=, answer tone

Diagnostics/Indicators ● none supported

Other Features/Options ● file transfers, programmable automatic database log-on for online databases ● text editing ● electronic mail ● error control ● concurrent operations including data display/printer transfer; data display/disk transfer ● operating power derived from the personal computer ● includes handset jack

Cost/Service ● basic price $549 ● 2-year warranty ● own service; factory service

■ TANDY CORPORATION/RADIO SHACK
1800 One Tandy Center, Fort Worth, TX 76102 ● 817-390-3300

☐ Acoustic Coupler AC-3

Application ● compatible with Bell 103 modems

Packaging ● acoustic coupler

Operating Parameters ● half-/full-duplex asynchronous at rates to 300 bps ● originate/answer modes ● FSK modulation ● RS-232C DTE interface

Dialing ● manual dial via telephone

Call Answering ● manual answer

Personal Computer Requirements ● none supported

Software Supported Menus/Operator Messages ● none supported

Diagnostics/Indicators ● front-panel LED for carrier detect

Other Features/Options ● none supported

Cost/Service ● basic price $149.95 ● 90-day warranty ● own service; factory service; 200 repair centers throughout the U.S.

☐ Direct-Connect Modem I

Application ● compatible with Bell 103 modems ● FCC Certified

Packaging ● standalone direct-connect modem

Operating Parameters ● full-duplex asynchronous at rates to 300 bps ● originate/answer modes ● FSK modulation ● RS-232C DTE interface

Dialing ● manual dial via telephone

Call Answering ● manual answer

Personal Computer Requirements ● none supported

Software Supported Menus/Operator Messages ● none supported

Diagnostics/Indicators ● front-panel LEDs for CD, power

Other Features/Options ● none supported

Cost/Service ● basic price $149 ● 90-day warranty ● own service; factory service; 200 repair centers throughout the U.S.

☐ Direct Connect Modem II

Application ● compatible with Bell 103 modems ● FCC Certified

Packaging ● standalone direct-connect modem

Operating Parameters ● half-/full-duplex asynchronous at rates to 300 bps ● originate/answer modes ● FSK modulation ● RS-232C DTE interface

Dialing ● manual dial via telephone; automatic dial with storage for 1 telephone number of 25 characters ● pulse dial ● tone dial ● tandem dial

Call Answering ● manual answer or automatic answer automatically connects the personal computer to the phone line

Personal Computer Requirements ● none supported

Software Supported Menus/Operator Messages ● none supported

Diagnostics/Indicators ● analog loopback; digital loopback ● front-panel LEDs for power, on hook, transmit, CD, TD, RD

Other Features/Options ● none supported

Cost/Service ● basic price $249 ● 90-day warranty ● own service; factory service; 200 repair centers throughout the U.S.

☐ Direct-Connect Modem DC-1200

Application ● compatible with Bell 212A modems ● FCC Certified

Packaging ● standalone direct-connect modem

Operating Parameters ● half-/full duplex asynchronous at 300/1200 bps; synchronous at 1200 bps ● FSK, DPSK modulation ● RS-232C DTE interface

Dialing ● manual dial via telephone ● optional automatic dial (features unavailable)

Call Answering ● automatic answer automatically connects the personal computer to the phone line

Personal Computer Requirements ● none supported

Software Supported Menus/Operator Messages ● none supported

Diagnostics/Indicators ● front-panel LEDs for 7 key EIA interface signals

Other Features/Options ● optional auto-dial module

Cost/Service ● basic price $699, option pricing unavailable ● 90-day warranty ● own service; factory service; 200 repair centers throughout the U.S.

■ TEK-COM
2142 Paragon Drive, San Jose, CA 95131 ● 408-263-7400

☐ TC 3001

Application ● compatible with Bell 103 modems

Packaging ● acoustic coupler

Operating Parameters ● half-/full-duplex asynchronous at rates to 300 bps ● originate only mode ● FSK modulation ● RS-232C DTE interface

Dialing ● manual dial via telephone

Call Answering ● none supported

Personal Computer Requirements ● none supported

Software Supported Menus/Operator Messages ● none supported

Diagnostics/Indicators ● front-panel LEDs for received carrier/clear to send, power on

Other Features/Options ● none supported

Personal Computer Modems

Cost/Service ● basic price $249 ● quantity discounts available ● 1-year warranty ● own service; factory service

☐ TC 3002

Application ● compatible with Bell 103 modems

Packaging ● acoustic coupler

Operating Parameters ● half-/full-duplex asynchronous at rates to 300 bps ● originate/answer modes ● FSK modulation ● RS-232C or current-loop DTE interface

Dialing ● manual dial via telephone

Call Answering ● manual answer

Personal Computer Requirements ● none supported

Software Supported Menus/Operator Messages ● none supported

Diagnostics/Indicators ● front-panel LED's

Other Features/Options ● none supported

Cost/Service ● basic price $265 ● quantity discounts available ● 1-year warranty ● own service; factory service

☐ TC 3006

Application ● compatible with Bell 103 modems

Packaging ● acoustic coupler

Operating Parameters ● half-/full-duplex asynchronous at 300 bps ● originate only mode ● FSK modulation ● RS-232C DTE interface

Dialing ● manual dial via telephone

Call Answering ● none supported

Personal Computer Requirements ● none supported

Software Supported Menus/Operator Messages ● none supported

Diagnostics/Indicators ● front-panel LED's for power, carrier

Other Features/Options ● none supported

Cost/Service ● basic price $195 ● quantity discounts available ● 1-year warranty ● own service; factory service

☐ TC 3012

Application ● compatible with Bell 103 modems

Packaging ● acoustic coupler

Operating Parameters ● half-/full-duplex asynchronous at rates to 300 bps ● originate only mode ● FSK modulation ● TTL DTE interface

Dialing ● manual dial via telephone

Call Answering ● none supported

Personal Computer Requirements ● none supported

Software Supported Menus/Operator Messages ● none supported

Diagnostics/Indicators ● front-panel LEDs for clear to send, power

Other Features/Options ● operating power derived from the personal computer ● TTL plug-compatible with Teletype Model 43 teleprinter

Cost/Service ● basic price $195 ● quantity discounts available ● 1-year warranty ● own service; factory service

☐ TC 4007

Application ● compatible with Bell 103 modems ● FCC Certified

Packaging ● standalone direct-connect modem

Operating Parameters ● half-/full-duplex asynchronous at 300 bps ● originate/answer modes ● FSK modulation ● RS-232C or current-loop DTE interface

Dialing ● manual dial via telephone; supports automatic dialing ● supports alternate voice/data plus regular telephone ● manual dialing via integral touch-tone keypad

Call Answering ● manual answer or automatic answer automatically connects the personal computer to the phone line

Personal Computer Requirements ● none supported

Software Supported Menus/Operator Messages ● none supported

Diagnostics/Indicators ● front-panel LEDs for power, auto-answer, data terminal ready, transmit, receive

Other Features/Options ● none supported

Cost/Service ● basic price $365 ● price ranges from $365 to $495 depending on options ● quantity discounts available ● 1-year warranty ● own service; factory service

☐ TC 2122

Application ● compatible with Bell 212A modems ● FCC Certified

Packaging ● standalone direct-connect modem

Operating Parameters ● full-duplex asynchronous at 300/1200 bps; synchronous at 1200 bps ● answer/originate modes ● FSK, DPSK modulation ● RS-232C DTE interface

Dialing ● manual dial via telephone; optional terminal keyboard dial ● supports optional alternate voice/data via talk/data switch plus regular telephone ● integral keypad dialing

Call Answering ● manual answer or automatic answer automatically connects the personal computer to the phone line

Personal Computer Requirements ● none supported

Software Supported Menus/Operator Messages ● none supported

Diagnostics/Indicators ● none supported

Other Features/Options ● optional built-in voice/data switch; built-in keypad; keyboard (ASCII) dialing from computer or terminal

Cost/Service ● basic price $849 ● price ranges from $849 to $995 depending on options ● quantity discounts available ● 1-year warranty ● own service; factory service

■ TEXAS INSTRUMENTS, INC

P.O. Box 202146, H-617, Dallas, TX 75220 ● 214-995-2011

☐ HX-3100

Application ● compatible with Bell 103 modems ● personal computer compatibility for TI Compact Computer 40, 994A Home Computer (hex bus adapter) ● FCC Certified (pending)

Packaging ● standalone direct-connect modem

Operating Parameters ● full-duplex asynchronous at rates to 300 bps ● answer/originate modes ● FSK modulation ● TI hex bus DTE interface

Dialing ● manual dial via telephone

Call Answering ● manual answer

Personal Computer Requirements ● requires "Memo Processor with Data Communications" Solid State Software

Software Supported Menus/Operator Messages ● communications/other parameters established via screen menus for stop/start bits, answer/originate, number of data bits, parity, check parity, echo, carriage return, transfer type, data overrun indicator

Diagnostics/Indicators ● front-panel LED for carrier detect

Other Features/Options ● requires 4 AA alkaline batteries

Cost/Service ● basic price $99.95 ● 90-day warranty ● own service; field service; factory service ● field service locations for 49 TI service centers around the country

■ TRI-DATA

505 East Middlefield Road, Mountain View, CA 94086 ● 415-969-3700

☐ OZ-225

Application ● compatible with Bell 212A modems ● FCC Certified

Packaging ● standalone direct-connect modem ● communications software supplied on ROM

Personal Computer Modems

Operating Parameters ● half-/full-duplex asynchronous at 300/1200 bps ● originate/answer modes ● FSK, PSK modulation ● RS-232C DTE interface

Dialing ● manual dial via telephone; terminal keyboard dial; automatic dial with storage for 200 telephone numbers of 80 characters each ● pulse dial ● tone dial ● tandem dial ● multiple re-dial up to 15 times; supports an infinite linked list of telephone numbers ● supports alternate voice/data via keyboard command

Call Answering ● manual answer or automatic answer automatically connects the personal computer to the phone line

Personal Computer Requirements ● none supported

Software Supported Menus/Operator Messages ● communications/other parameters established via screen menus; 50+ parameters can be set and stored in non-volatile memory ● alternate configurations can be stored ● operator messages including no answer, busy, online, help file, list commands, call progress messages, data state messages, disconnect messages

Diagnostics/Indicators ● self-test of modem circuitry ● analog loopback; digital loopback ● front-panel LEDs for power, transmit, receive, test

Other Features/Options ● programmable automatic database log-on for online databases ● text editing (line editor) ● the OZ-225 features number dialing restrictions to prevent unauthorized calls, and remote loading capabilities to prevent users from accessing commands, directories, etc, used to configure the modem to the network

Cost/Service ● basic price $1,375 ● 1-year warranty ● own service; factory service

■ UNIVERSAL DATA SYSTEMS, INC (UDS)

5000 Bradford Drive, Huntsville, AL 35805 ● 205-837-8100

□ 103 O/A LP

Application ● compatible with Bell 103 modems ● FCC Certified

Packaging ● standalone direct-connect modem

Operating Parameters ● full-duplex asynchronous at rates to 300 bps ● originate/answer modes ● FSK modulation ● RS-232C or current-loop DTE interface

Dialing ● manual dial via telephone ● supports alternate voice/data via talk/data switch plus regular telephone

Call Answering ● manual answer

Personal Computer Requirements ● none supported

Software Supported Menus/Operator Messages ● none supported

Diagnostics/Indicators ● front-panel LED for data on

Other Features/Options ● operating power derived from the phone line

Cost/Service ● basic price $145 ● quantity discounts available ● 1-year warranty ● own service; factory service

□ 103J LP

Application ● compatible with Bell 103 modems ● FCC Certified

Packaging ● standalone direct-connect modem

Operating Parameters ● full-duplex asynchronous at rates to 300 bps ● originate/answer modes ● FSK modulation ● RS-232C DTE interface

Dialing ● manual dial via telephone ● supports alternate voice/data via talk/data switch plus regular telephone

Call Answering ● manual answer or automatic answer automatically connects the pesonal computer to the phone line

Personal Computer Requirements ● none supported

Software Supported Menus/Operator Messages ● none supported

Diagnostics/Indicators ● front-panel LED for data on

Other Features/Options ● operating power derived from the phone line ● rackmount answer-only version available

Cost/Service ● basic price $195 ● quantity discounts available ● 1-year warranty ● own service; factory service

□ 103J

Application ● compatible with Bell 103 modems ● FCC Certified

Packaging ● standalone direct-connect modem

Operating Parameters ● full-duplex asynchronous at rates to 300 bps ● originate/answer modes ● FSK modulation ● RS-232C DTE interface

Dialing ● manual dial via telephone ● supports alternate voice/data via talk/data switch plus regular telephone

Call Answering ● manual answer or automatic answer automatically connects the personal computer to the phone line

Personal Computer Requirements ● none supported

Software Supported Menus/Operator Messages ● none supported

Diagnostics/Indicators ● analog loopback; digital loopback, front-panel LEDs for key EIA interface signals; test mode; circuit quality

Other Features/Options ● available in rackmount version ● can interface with UDS 801 series auto-call units

Cost/Service ● basic price $425 ● quantity discounts available ● 1-year warranty ● own service; factory service

□ 212-LP

Application ● compatible with Bell 212A modems ● FCC Certified

Packaging ● standalone direct-connect modem

Operating Parameters ● full-duplex asynchronous at 1200 bps ● DPSK modulation ● RS-232C DTE interface

Dialing ● manual dial via telephone ● supports alternate voice/data via talk/data switch plus regular telephone

Call Answering ● manual answer

Personal Computer Requirements ● none supported

Software Supported Menus/Operator Messages ● none supported

Diagnostics/Indicators ● front-panel LED for data on

Other Features/Options ● operating power derived from the phone line

Cost/Service ● basic price $445 ● quantity discounts available ● 1-year warranty ● own service; factory service

□ 212A

Application ● compatible with Bell 212A modems ● FCC Certified

Packaging ● standalone direct-connect modem

Operating Parameters ● full-duplex asynchronous at 300/1200 bps; synchronous at 1200 bps ● originate/answer modes ● FSK, PSK modulation ● RS-232C DTE interface

Dialing ● manual dial via telephone ● supports alternate voice/data via talk/data switch plus regular telephone

Call Answering ● manual answer or automatic answer automatically connects the personal computer to the phone line

Personal Computer Requirements ● none supported

Software Supported Menus/Operator Messages ● none supported

Diagnostics/Indicators ● self-test of modem circuitry ● analog loopback; digital loopback ● front-panel LEDs for key EIA interface signals; test mode; circuit quality

Other Features/Options ● available in rackmount version ● can interface to UDS 801 series auto-call unit

Personal Computer Modems

Cost/Service ● basic price $675 ● quantity discounts available ● 1-year warranty ● own service; factory service

☐ 212A/D

Application ● compatible wtih Bell 212A modems ● FCC Certified

Packaging ● standalone direct-connect modem

Operating Parameters ● full-duplex asynchronous at 300/1200 bps; synchronous at 1200 bps ● originate/answer modes ● FSK, PSK modulation ● RS-232C DTE interface

Dialing ● manual dial via telephone; terminal keyboard dial; automatic dial with storage for 5 telephone numbers of 30 characters each ● pulse dial ● tone dial ● supports alternate voice/data via talk/data switch plus regular telephone

Call Answering ● manual answer or automatic answer automatically connects the personal computer to the phone line

Personal Computer Requirements ● none supported

Software Supported Menus/Operator Messages ● none supported

Diagnostics/Indicators ● self-test of modem circuitry ● analog loopback, digital loopback, front-panel LEDs for key EIA interface signals; test mode; circuit quality

Other Features/Options ● available in rackmount version ● battery backup for memory

Cost/Service ● basic price $745 ● quantity discounts available ● 1-year warranty ● own service; factory service

■ VEN-TEL INC

2390 Welsh Avenue, Santa Clara, CA 95051 ● 408-727-5721

☐ Model AC103-1 Acoustic Telephone Coupler

Application ● compatible with Bell 103 modems

Packaging ● acoustic coupler

Operating Parameters ● half-/full-duplex asynchronous at rates to 300 bps ● originate only mode ● FSK modulation ● RS-232C or current-loop DTE interface

Dialing ● manual dial via telephone

Call Answering ● none supported

Personal Computer Requirements ● none supported

Software Supported Menus/Operator Messages ● none supported

Diagnostics/Indicators ● front-panel LEDs for power on, carrier detect

Other Features/Options ● none supported

Cost/Service ● basic price $245 ● quantity discounts: 10+=$225 ● 1-year warranty ● own service; factory service

☐ Model AC103-3

Application ● compatible with Bell 103 modems

Packaging ● acoustic coupler

Operating Parameters ● half-/full-duplex asynchronous at rates to 300 bps ● originate/answer modes ● FSK modulation ● RS-232C or current-loop DTE interface

Dialing ● manual dial via telephone

Call Answering ● manual answer

Personal Computer Requirements ● none supported

Software Supported Menus/Operator Messages ● none supported

Diagnostics/Indicators ● front-panel LEDs for power on, carrier detect

Other Features/Options ● none supported

Cost/Service ● basic price $270 ● quantity discounts: 10+=$250 ● 1-year warranty ● own service; factory service

☐ MD 103-2

Application ● compatible with Bell 103 modems ● FCC Certified

Packaging ● standalone direct-connect modem

Operating Parameters ● half-/full-duplex asynchronous at rates to 300 bps ● originate/answer modes ● FSK modulation ● RS-232C or current-loop DTE interface

Dialing ● manual dial via telephone

Call Answering ● manual answer or automatic answer automatically connects the personal computer to the phone line

Personal Computer Requirements ● none supported

Software Supported Menus/Operator Messages ● none supported

Diagnostics/Indicators ● analog loopback, digital loopback ● LEDs for power on, off hook, and 6 key EIA interface signals

Other Features/Options ● available in rackmount version

Cost/Service ● basic price $230 ● price ranges from $230 to $395 depending on options ● quantity discounts: 10+=$200 ● 1-year warranty ● own service; factory service

☐ MD 212

Application ● compatible with Bell 212A modems ● FCC Certified

Packaging ● standalone direct-connect modem

Operating Parameters ● full-duplex asynchronous at 300/1200 bps; synchronous at 1200 bps ● originate/answer modes ● FSK, PSK modulation ● RS-232C or current-loop DTE interface

Dialing ● manual dial via telephone

Call Answering ● manual answer or automatic answer automatically connects the personal computer to the phone line

Personal Computer Requirements ● none supported

Software Supported Menus/Operator Messages ● none supported

Diagnostics/Indicators ● self-test of modem circuitry ● analog loopback; digital loopback ● front-panel LEDs for test mode, error condition, interface signal status

Other Features/Options ● available in rackmount version

Cost/Service ● basic price $850 ● price ranges from $850 to $995 depending on options ● quantity discounts: 10+=$790 ● 1-year warranty ● own service; factory service

☐ MD 212 Plus

Application ● compatible with Bell 212A modems ● FCC Certified

Packaging ● standalone direct-connect modem

Operating Parameters ● full-duplex asynchronous at 300/1200 bps; synchronous at 1200 bps ● originate/answer modes ● FSK, PSK modulation ● RS-232C DTE interface

Dialing ● terminal keyboard dial; automatic dial with storage for 5 telephone numbers of 26 characters each ● pulse dial ● tone dial ● tandem dial ● multiple re-dial; supports a linked list of telephone numbers

Call Answering ● none supported

Personal Computer Requirements ● none supported

Software Supported Menus/Operator Messages ● operator messages including no answer, busy, online

Diagnostics/Indicators ● self-test of modem circuitry ● analog loopback, digital loopback

Other Features/Options ● available in rackmount

Cost/Service ● basic price $995 ● quantity discounts: 10+=$930 ● 1-year warranty ● own service, factory service

☐ MD 212 Plus II

Application ● compatible with Bell 212A modems ● FCC Certified

Personal Computer Modems

Packaging • standalone direct-connect modem

Operating Parameters • full-duplex asynchronous at 300/1200 bps; synchronous at 1200 bps • originate/answer modes • FSK, PSK modulation • RS-232C DTE interface

Dialing • terminal keyboard dial; automatic dial with storage for 9 telephone numbers of 30 characters each • pulse dial • tone dial • tandem dial • multiple re-dial up to an infinite number of times; supports a linked list of telephone numbers

Call Answering • none supported

Personal Computer Requirements • none supported

Software Supported Menus/Operator Messages • operator messages including help file

Diagnostics/Indicators • self-test of modem circuitry • analog loopback, digital loopback

Other Features/Options • automatic database log-on for online databases • data display/printer transfer; data display/disk transfer • data security features

Cost/Service • basic price $1,250 • quantity discounts available • 1-year warranty • own service; factory service

□ PC Modem Plus 300

Application • compatible with Bell 103 modems • personal computer compatibility for IBM PC (and lookalikes) • FCC Certified

Packaging • plug-in board • communications software ("Crosstalk") supplied on diskette

Operating Parameters • half-/full-duplex asynchronous at rates to 300 bps • originate mode • FSK modulation

Dialing • manual dial via telephone; terminal keyboard dial; automatic dial with storage for 30 characters • pulse dial • tone dial • tandem dial • single keystroke dial • multiple re-dial to an infinite number of times • supports a linked list of telephone numbers

Call Answering • manual answer or automatic answer automatically connects the personal computer to the phone line

Personal Computer Requirements • requires IBM PC with 64K-byte main memory • 5.25-inch diskette

Software Supported Menus/Operator Messages • 100+ communications/other parameters established via screen menus as provided by "Crosstalk" communications software • operator messages including no answer, busy, online, help file, list commands, various status indications

Diagnostics/Indicators • none supported

Other Features/Options • file transfers • automatic database log-on for online databases • text editing (limited screen editing) • electronic mail • error control • concurrent operations including data display/printer transfer; data display/disk transfer • operating power derived from the personal computer • supports second digital interface for local printer

Cost/Service • basic price $389, option pricing for speed adapter $300 • price ranges from $389 to $689 depending on options • 2-year warranty • own service; factory service

■ VISIONARY ELECTRONICS

141 Parker Avenue, San Francisco, CA 94118 • 415-751-8811

□ Visionary 100

Application • compatible wtih Bell 103 modems • FCC Certified (pending)

Packaging • standalone direct-connect modem • communications software supplied on ROM

Operating Parameters • half-/full-duplex asynchronous at rates to 300 bps • FSK modulation • RS-232C DTE interface

Dialing • automatic dial with storage for an "infinite" number of telephone numbers • pulse dial • tone dial • tandem dial • single keystroke dial • multiple re-dial up to an infinite number of times

Call Answering • automatic answer automatically connects the personal computer to the phone line

Personal Computer Requirements • none supported

Software Supported Menus/Operator Messages • communications/other parameters established via screen menus for half-/full-duplex, dialing mode, parity, error correct routing • operator messages including no answer, busy, online, help file, list commands

Diagnostics/Indicators • front-panel LEDs for off hook, carrier detect, send, receive, auto-answer, message waiting, memory full

Other Features/Options • file transfers • programmable automatic database log-on for online databases • text editing (delete characters only) • electronic mail • error control (looks for echoed character) • concurrent operations including data display/printer transfer; data display/disk transfer • alternate communications line contains interval non-volatile RAM (expandable 2-24K); RJ11 jacks

Cost/Service • basic price $595 (2K), option pricing $760 (24K) • quantity discounts available • 120-day warranty • own service; factory service • distributor location

□ Visionary 212

Application • compatible with Bell 212A modems • FCC Certified (pending)

Packaging • standalone direct-connect modem • communications software supplied on ROM

Operating Parameters • half-/full-duplex asynchronous at 300/1200 bps • FSK, DPSK modulation • RS-232C DTE interface

Dialing • automatic dial with storage for an infinite number of telephone numbers • pulse dial • tone dial • tandem dial • single keystroke dial • multiple re-dial up to an infinite number of times

Call Answering • automatic answer automatically connects the personal computer to the phone line

Personal Computer Requirements • none supported

Software Supported Menus/Operator Messages • communications/other parameters established via screen menus for half-/full duplex, dialing mode, parity, error control routine • operator messages including no answer, busy, online, help file, list commands

Diagnostics/Indicators • front-panel LEDs for off hook, carrier detect, sending, receiving, auto-answer, message waiting, memory full

Other Features/Options • file transfers • automatic database log-on for online databases • text editing (character delete), electronic mail • error control (looks for echoed characters), concurrent operations including data display/printer transfer; data display/disk transfer • contains internal non-volatile RAM (24+K); RJ-11 jack

Cost/Service • basic price N/A • own service; factory service

■ WOLFDATA

187 Billerica Road, Chelmsford, MA 01824 • 617-250-1500

□ QUIKCOM

Application • compatible with Bell 212A modems • personal computer compatibility for the IBM PC, Compaq, Columbia, Corona • FCC Certified

Packaging • plug-in baord • communications software supplied on diskette

Operating Parameters • full-duplex asynchronous at 300/1200 bps • originate/answer modes • FSK, PSK modulation

Dialing • manual dial via telephone; terminal keyboard dial; automatic dial with storage for 40 telephone numbers of 20 characters each • pulse dial • tone dial • single keystroke dial • multiple re-dial up to 3 times • supports alternate voice/data through terminal keyboard

Call Answering • automatic answer automatically connects the personal computer to the phone line

Personal Computer Requirements • MS-DOS operating system • 5.25-inch diskette

Software Supported Menus/Operator Messages • communications/other parameters established via screen menus • operator messages

Personal Computer Modems

including online, carrier detect, printer on/off

Diagnostics/Indicators ● analog loopback

Other Features/Options ● file transfers ● programmable automatic database log-on for online databases ● electronic mail ● operating power derived from the personal computer

Cost/Service ● basic price $495 ● quantity discounts for 1,000 units at $250 ● 1-year warranty ● own service; factory service

■ ZOOM TELEPHONICS, INC

207 South Street, Boston, MA 02111 ● 617-423-1072 or 800-631-3116

□ Networker (formerly called Summa 300)

Application ● compatible with Bell 103 modems ● personal computer compatibility for Apple II, II+, and IIe computers ● FCC Certified

Packaging ● plug-in board ● communications software supplied on ROM

Operating Parameters ● half-/full-duplex asynchronous at rates to 300 bps ● originate/answer modes ● FSK modulation

Dialing ● manual dial via telephone

Call Answering ● manual answer

Personal Computer Requirements ● 5.25-inch diskette

Software Supported Menus/Operator Messages ● communications/other parameters estabished via screen menus for full-duplex/half-duplex, speed, character length, partiy, stop/start, or can be set automatically ● operator messages including no answer, busy, online, help file, list commands

Diagnostics/Indicators ● front-panel LEDs for carrier detect

Other Features/Options ● concurrent operations for data display/disk transfer ● operating power derived from the personal computer

Cost/Service ● basic price $129, option pricing NETMASTER software—$80 ($179-Combo) ● quantity discounts aviable ● 1-year warranty ● own service; factory service

● END